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CUMULATIVE
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NASA TECH BRIEFS
1970 - 1975

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Introduction

abstract of which

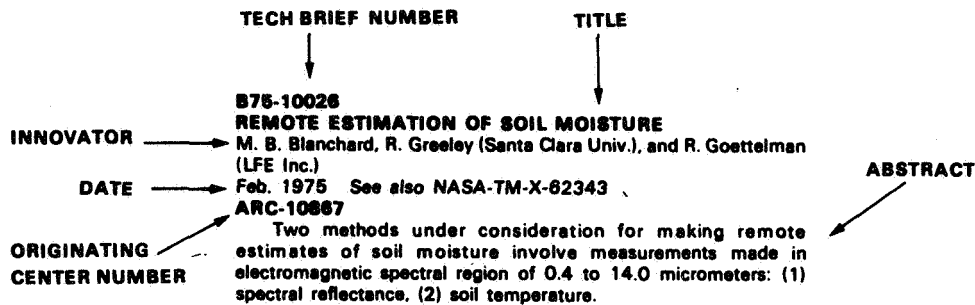
Tech Briefs are short announcements of new technology derived from the research and development activities of the National Aeronautics and Space Administration. These briefs emphasize information considered likely to be transferrable across industrial, regional, or disciplinary lines and are issued to encourage commercial application.

are presented
This Index to NASA Tech Briefs contains abstracts and four indexes: subject, personal author, originating Center, and Tech Brief number for 1970-1975 Tech Briefs.

Abstract Section

The abstract section is divided into nine categories: Electronics/Electrical; Electronic/Electrical Systems; Physical Sciences; Materials/Chemistry; Life Sciences; Mechanics; Machinery, Equipment, and Tools; Fabrication Technology; and Computer Programs. Within each category, abstracts are arranged sequentially by Tech Brief number.

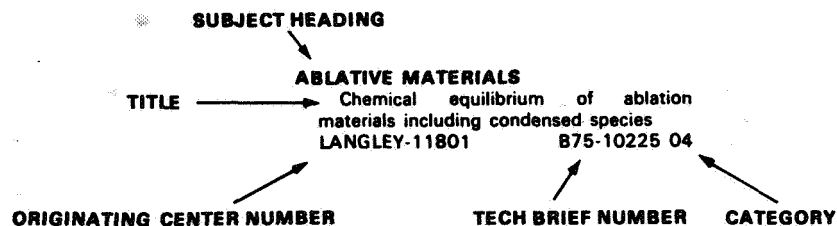
A typical abstract entry has these elements:



The originating Center number in each entry includes an alphabetical prefix that identifies the NASA Center where the Tech Brief originated. A list of prefixes and the corresponding Center names are given on page iii.

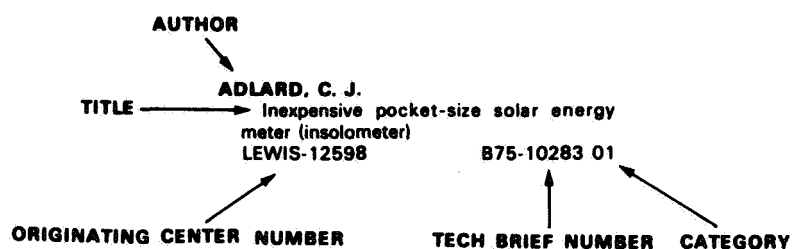
Indexes

Four indexes are provided. The first is a subject index, arranged alphabetically by subject heading. Each entry in the subject index includes a Tech Brief number and a category number to aid the user in locating pertinent entries in the abstract section.

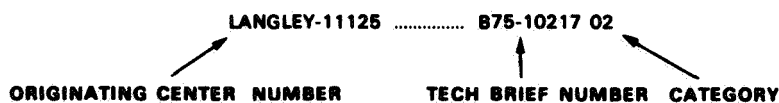


The January 1976 edition of the *NASA Thesaurus* (NASA SP-7050) is used as the authority for the indexing vocabulary that appears in the subject index. The *NASA Thesaurus* should be consulted in examining the current indexing vocabulary, including associated cross-reference structure. Only the subject terms that have been selected to describe the documents abstracted in this issue appear in the subject index. Copies of the *NASA Thesaurus* may be obtained from the National Technical Information Service or the U.S. Government Printing Office at \$23.50 for the two-volume set.

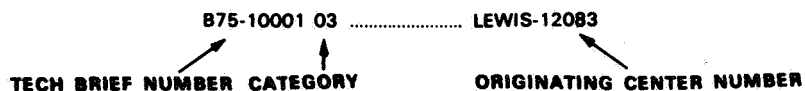
The second index is a personal author index. Entries in this index are arranged alphabetically by author's name. Tech Brief and category numbers are supplied to help the user find the appropriate entries in the abstract section.



The third index relates each originating Center number to the corresponding Tech Brief number and category. Entries in this index are arranged in alphanumeric order by Center number.



The fourth index relates each Tech Brief number to its originating Center number. Entries are arranged in ascending Tech Brief number order.



Originating Center Prefixes

ARC	Ames Research Center
GSFC	Goddard Space Flight Center
HQ	NASA Headquarters
KSC	Kennedy Space Center
LANGLEY	Langley Research Center
LEWIS	Lewis Research Center
M-FS	Marshall Space Flight Center
MSC	Johnson Space Center (formerly Manned Spacecraft Center)
NPO	Jet Propulsion Laboratory/NASA Pasadena Office

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TABLE OF CONTENTS

Abstract Section

Category 01	Electronics/Electrical	1
02	Electronic/Electrical Systems	34
03	Physical Sciences	64
04	Materials/Chemistry	104
05	Life Sciences	141
06	Mechanics	156
07	Machinery, Equipment, and Tools . .	178
08	Fabrication Technology	197
09	Computer Programs	210

Indexes

Subject	I-1
Personal Author	I-413
Originating Center/Tech Brief Number	I-499
Tech Brief/Originating Center Number	I-515



Cumulative Index to NASA Tech Briefs

1970—1975

Abstract Section

01 ELECTRONICS/ELECTRICAL

B70-10003

FUSE AND SWITCH FUNCTIONS COMBINED WITHIN
A SINGLE HOUSING
COHN, E. M. MAXWELL, P. T. DATE- SEP. 1970
HQ-10497

Fuswitch provides both switch and fuse functions within a single housing. A mercury capillary is used to alternately vaporize and condense the mercury within a reservoir. The housing is impervious to mercury and the fuse portion of the device operates on the principle of the self-healing mercury fuse.

B70-10005

BUCK-BOOST DC VOLTAGE REGULATOR
LA VIGNA, T. DATE- JUN. 1970
GSFC-10735

Circuit provides voltage regulation through a wide range of operating frequencies without intervals of high power dissipation.

B70-10010

DIGITAL FREQUENCY DISCRIMINATOR
REID, W. J. /MOTOROLA, INC./ DATE- MAY 1970
M-PS-14322

Frequency discriminator has five integrated circuit chips interconnected to provide a divide function, exclusive OR function, phase shifting, and holding so that a single binary output signal results. The state of the binary signal indicates which one of the two input signals has a lower frequency than the other.

B70-10016

ECONOMICAL WEATHERPROOF HELICAL ANTENNA
CRIBB, H. E. DATE- JUL. 1970
XKS-08485

Semi-rigid coaxial cable forms the helical element of antennas. Antennas are inexpensive, corrosion resistant, require minimum maintenance, and can be easily transported and assembled.

B70-10018

IMPROVED BEAM-LEAD INTERCONNECTION
STRUCTURE FOR UNCASSED INTEGRATED CIRCUIT
CHIPS
MARLEY, J. /ITT FEDERAL LABS./ DATE- JUL. 1970
LANGLEY-10227

Interconnection structure eliminates several levels of manually made interconnections and shortens the path lengths from generator to load, permitting reduction in consumed power.

B70-10021

SEVERAL NEW CATALYSTS FOR REDUCTION OF
OXYGEN IN FUEL CELLS
CATTABRIGA, R. A. /TYCO LABS., INC./ COHN, E. M.
GINER, J. D. MAKRIDES, A. C. SWETTE, L. L.
DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-97624
HQ-10452 HQ-10453 HQ-10454

Test results prove nickel carbide or nitride, nickel-cobalt carbide, titanium carbide or nitride, and intermetallic compounds of the transition or noble metals to be efficient electrocatalysts for oxygen reduction in alkaline electrolytes in low temperature fuel cells.

B70-10022

SOLID STATE SWITCH PROVIDES HIGH
INPUT-TO-OUTPUT ISOLATION
MAGEE, R. L. /GE/ TROWBRIDGE, L. E. DATE- APR.
1970
HQ-10488

Switch uses a combination of N-channel and P-channel Metal Oxide Semiconductor Field Effect Transistors /MOSFET/ to obtain a normally open switch with no power applied. Series-shunt-series MOSFET switching achieves high input-output isolation.

B70-10024

ELECTRODYNAMIC INDUCTION FLOWMETER
MELCHER, J. A. /MIT/ DATE- JUN. 1970
HQ-10230

Device determines velocity and electrical conductivity of a moving fluid of high electrical resistance by imposing a transverse electro-quasistatic field on the fluid. Position changes of charge accumulations induced within the fluid by the field are sensed by relative movement between fluid and sensor.

B70-10025

A RANGE-RATE EXTRACTION UNIT FOR DETERMINING
DOPPLER EFFECT
SPON- INNOVATOR NOT GIVEN /GEN. DYN./
ASTRONAUTICS/ DATE- APR. 1970 REAN- SEE ALSO
NASA-CR-107905
GSFC-10750

Active ranging technique devised for VHF or S-band radar systems divides target Doppler frequency by counter-generated number that is proportional to transmitting frequency, thus producing target velocity data in terms of speed and distance relative to target transponder.

B70-10029

IMPROVED SILICON SOLAR CELLS
KAUTZ, H. E. DATE- MAY 1970
LEWIS-10964

Redistribution of phosphorus within the n-type layers of n-on-p silicon solar cells results in significant improvements in cell performance. Electrical current output is increased, reduction in current output due to radiation damage is lessened, and very shallow junctions are no longer needed.

B70-10033

A SIMPLE TESTER PROVIDES RESONANT FREQUENCY
MEASUREMENTS OF FERRITE DEVICES
CLAUSS, R. C. DATE- JUL. 1970
NPO-10678

Tester enables direct measurement of the resonant frequency of an yttrium iron garnet disk. The disk is tested while mounted on the isolator strip with less regard for dimensional flaws.

B70-10034

ACTIVE RESISTANCE CAPACITANCE FILTER DESIGN
KERWIN, W. J. DATE- MAY 1970
ARC-10020

Filters, formed by combinations of distributed RC elements with positive-feedback voltage amplifiers, provide transfer functions similar to those the heavier LC filters ordinarily employ. They also provide signal amplification.

B70-10035

NICKEL-SILVER COMPOSITION SHOWS PROMISE AS
CATALYST FOR HYDROGEN-OXYGEN FUEL CELLS
MAGERL, J. A. /ALLIS-CHALMERS RES. DIV./ MURRAY,
J. N. DATE- JUN. 1970
HQ-10565

Carburized 3-1 nickel-silver preparation exhibits considerable catalytic activity, although not as high as platinum black. Cost and availability

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01 ELECTRONICS/ELECTRICAL

factors warrant further evaluation of nickel-silver materials.

B70-10039

HIGH-RESOLUTION SPECTRAL ANALYSIS
GILLMORE, W. F., JR. DATE- JUL. 1970
NPO-10748

Analyzer extends the range and resolution of a digital spectrum analyzer without placing stringent stability requirements on the sampling rate. It compares an unknown signal with a stable frequency standard.

B70-10043

DATA ACQUISITION FROM HIGH-SPEED ROTATING SHAFTS

LESCO, D. J. NIEBERDING, W. C. STURMAN, J. C.
DATE- JUN. 1970 REAN- SEE ALSO NASA-TN-D-5678
LEWIS-10886

Data system, when used with a rotary transformer, results in increased life, negligible noise, and capability for a large number of data channels in testing rotating equipment. It is used to multiplex many channels of analog transducer output data and convert this signal to binary digital output.

B70-10045

COMMUTATING BRUSHES TESTED IN DC MOTORS IN DRY ARGON ATMOSPHERES

BERNSTEIN, G. J. COLEMAN, L. F. SLAWICKI, H. A.
DATE- JAN. 1970 REAN- SEE ALSO ANL-7262
ARG-10243

Test apparatus, procedures, and results are given for dc-motor brushes operating in dry argon. Minimum concentrations of argon impurities are also determined.

B70-10046

CONSTANT-VOLTAGE DRIVE CURRENT-STEERING SWITCH

CAPLETTE, R. K. DATE- JUL. 1970
NPO-10743

Two-element voltage control system regulates a magnetic switch consisting of dual ferrite-core shift registers. The system has a magnetic, two-core-per-bit, voltage-controlled shift register.

B70-10049

HIGH-FREQUENCY WATTAGE-TO-VOLTAGE CONVERTER
FRANCIK, J. E. DATE- JUN. 1970 REAN- SEE ALSO
NASA-TN-D-5674
LEWIS-10822

Solid state device, which measures electric power over a wide frequency range, multiplies two electrical input signals to produce an output voltage that is proportional to their product. Quarter-square type of electronic analog multiplier is used.

B70-10051

BLOCK ENCODERS FOR REED-MULLER CODES

ANDERSON, T. O. DATE- SEP. 1970

NPO-10629 NPO-10636

Encoding algorithms generate a 32 x 64-bit matrix Reed-Muller code from a 6-bit orthogonal code-word. This increases error-free reception by a high rate telemetry channel under adverse signal noise with minimal use of additional hardware.

B70-10053

WIDE-RANGE PULSE-HEIGHT DISCRIMINATOR

CANCRO, C. A. GARRAHAN, W. M. DATE- SEP. 1970
GSFC-10837

Improved pulse amplitude discriminator has discriminator level in millivolt range, permits simple adjustment over wide range, and is stable within one percent at temperatures between minus 20 degrees and plus 60 degrees C. The discriminator responds to narrow pulses /500 nsec/, draws little power /milliwatts/, and requires simple circuitry.

B70-10057

MASS SPECTROMETER DETECTS HIGH MOLECULAR WEIGHT COMPONENTS

HERZOG, R. P. /GCA CORP./ DATE- JUL. 1970
HQ-10477

Monopole mass spectrometer uses sweep method to detect vacuum system contaminants. Method requires little increase of total scanning time.

B70-10059

MECHANISM OF OPERATION OF THE TFE-BONDED GAS-DIFFUSION ELECTRODE

GINER, J. /TYCO LABS., INC./ HUNTER, C. /MIT/
DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-97624
HQ-10536

Mathematical analytical model predicts the performance of an electrode as a function of certain measurable physical characteristics. Concept assumes the catalyst particles form porous electrically conductive agglomerates which are completely flooded with electrolyte.

B70-10064

GENERAL TECHNIQUE FOR MEASUREMENT OF REFRACTIVE INDEX VARIATIONS

SPON- INNOVATOR NOT GIVEN /STANFORD UNIV./ DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-95479
HQ-10359

Time variation of amplitude and phase fluctuations, impressed on waves propagating through a medium which has a randomly varying refractive index, is used to examine isolated regions along the line of propagation. Technique employs only one antenna at each end of the line.

B70-10065

A STABILIZED LOW-FREQUENCY

ALTERNATING-CURRENT ELECTRIC ARC

LANZO, C. D. DATE- MAY 1970 REAN- SEE ALSO
NASA-TN-X-52424
LEWIS-10442

Establishing an arc between water-cooled tungsten-tipped electrodes, maintaining the arc along the centerline of a central jet of argon gas, and surrounding the argon jet with a coaxial sheath of nitrogen stabilizes operation of a low-frequency ac electric arc.

B70-10070

STRANDED SUPERCONDUCTING CABLE OF IMPROVED DESIGN

BROOKS, J. LAVERICK, C. LOBELL, G. PURCELL, J.
DATE- APR. 1970
ARG-90108

High-current cable developed in liquid helium cooled magnets uses aluminum wire interspersed with the superconductor strands. The aluminum maintains higher electrical conductivity, is light in weight, and has low thermal capacity.

B70-10073

CONTINUOUSLY VARIABLE VOLTAGE-CONTROLLED PHASE SHIFTER

JOHNS, C. E. DATE- JUN. 1970
NPO-11129

Phase shifter circuit adjusts the phase relationship between a locally generated reference frequency and a received RF signal applied to a phase-coherent detector. It is small enough to be integrated into a receiver subassembly and operates on command from remote control panels.

B70-10074

IMPROVED SOLID STATE ELECTRON-CHARGE-STORAGE DEVICE

KUPER, A. B. /CASE WESTERN RESERVE UNIV./ DATE- JAN. 1970 REAN- SEE ALSO NASA-CR-90046
HQ-10152

Storage device is applicable in memory systems and in high-resolution arrays for light-responsive image sensing. The device offers high yield in multiple arrays and allows charge release with light striking only the edge of a metal electrode.

B70-10075

NEW TRANSVERSE PIEZORESISTANCE AND PINCH EFFECT ELECTROMECHANICAL TRANSDUCERS - A CONCEPT

PITTELLI, E. RINDER, W. DATE- SEP. 1970
ERC-10088

Device, under longitudinal bias, responds to pressure input with a transverse voltage proportional to the pressure signal. In the absence of a signal, the transverse voltage is zero even with bias, and, regardless of temperature, if the transverse contacts are

appropriately positioned along a zero-pressure equipotential.

B70-10076

IMPROVED LOW COST AC-TO-DC CONVERTER

CREMER, H. C. DATE- JUN. 1970

NPO-11055

Circuit converts an rms, ac voltage to a proportional dc voltage with good accuracy over a voltage range of approximately 6-1. It incorporates a pair of vacuum thermocouples in a dc feedback circuit.

B70-10079

TELEMETRY FOR IMPACT ACCELERATION

MEASUREMENTS

HARRISON, D. R. DATE- APR. 1970

ARC-10289

Telemetry package uses three separate FM/AM transmitters, one for each axis of measurement. Three AM receivers and a tape recorder are used for receiving, demodulating, and recording the acceleration signal.

B70-10082

SUPERCONDUCTING **TRANSISTOR** ACTS AS

HIGH-SPEED SWITCH

HEISSNER, H. /STEVENS INST. OF TECH./ DATE- DEC. 1970

HQ-10547

Cryogenic, three-terminal device yields current-voltage characteristics of ordinary transistor. Device consists of two superconducting tin rods in a crossed-wire geometry, separated by a thin gold film. New construction technique is described and possible applications are discussed.

B70-10096

SIGNAL CONDITIONER CIRCUIT FOR

PHOTOMULTIPLIER TUBE

CELLIER, A. /TEX. INSTR. INC./ HOOVER, W. M.

DATE- JAN. 1970

XLA-10773

Miniaturized circuit improves measurement of radiation dose absorbed in a scintillation crystal. The temperature coefficient of the field-effect transistor gate-source voltage in the isolation amplifier can be readily controlled.

B70-10097

FOAMING-ELECTROLYTE FUEL CELL

NANIS, L. /PA. UNIV./ SAUNDERS, A. P. DATE-

JAN. 1970

HQ-10147

Foam structure feeds fuel gas solution into electrolyte. Fuel gas reacts at static, three-phase interface between fuel gas, electrolyte, and electrode material. The foam forms an electrical contact between main body of electrolyte and the electrode, and aids in removal of by-products of the chemical reaction.

B70-10109

IMPROVED QUICK-DISCONNECT ELECTRICAL

CONNECTOR

HORTON, R. F. DATE- FEB. 1970

M-PS-20610

Electrical connector is fitted with an O ring, moisture-proof seal, is shielded in both the mated and unmated positions, and is equipped with one keying and three locking spheres.

B70-10117

INTEGRATED CIRCUIT FLAT-PACK LEAD BENDER

KOSTER, C. H. /LOCKHEED ELECTRON. CO./ DATE-

JUL. 1970

HSC-13489

Tool bends leads quickly and accurately for mounting on printed circuit boards. It has grooves and bend-angles aligned for particular circuit board applications.

B70-10118

ACOUSTIC VIBRATION TEST DETECTS

INTERMITTENT ELECTRICAL DISCONTINUITIES

GRIEVE, S. M. /N. AM. ROCKWELL CORP./ ROBERTS,

D. E. DATE- APR. 1970

HSC-15158

Nondestructive test method detects faulty

electrical connections in inaccessible or hidden portions of electronic harness assemblies and connectors. Method employs readily available commercial equipment.

B70-10119

GRAPHICAL METHOD TO PREDICT THE DYNAMIC

RESPONSE OF FM RECEIVERS

MERZ, K. /BOEING CO./ DATE- JUN. 1970

KSC-10111

Graphical method determines the rms threshold point, saturation point, and operating points for an FM receiver utilizing various modulation indices and degrees of submodulation.

B70-10123

HOLOGRAPHIC STRESS ANALYSIS

WILLIAMS, J. R. DATE- JUN. 1970

M-PS-20687

Device for nondestructive testing of soldered joints correlates stress with load to predict printed circuit board lifetime.

B70-10141

PULSE RATES RECORDED BY DIGITAL FILM

POSITIONER

GLASS, I. S. /MIT/ RICHARD, K. F. DATE- APR.

1970

HQ-10358

System converts detector pulse rates to photographs of binary scale indicator lights on continuously moving film. The system then scans the film and transfers the data to computer-compatible magnetic tape.

B70-10142

HIGHLY STABLE BIASED AMPLIFIER AND

STRETCHER SYSTEM

RODDICK, R. G. DATE- FEB. 1970

ARG-10354

Amplifier and stretcher system, which minimizes thermal effects and compensates for repetition-rate effects, maintains resolution levels in spectrum analysis. An additional inverting amplifier is used in the system to provide a noiseless charge restorer.

B70-10145

NEW ELECTROCATALYSTS FOR HYDROGEN-OXYGEN

FUEL CELLS

CATTABRIGA, R. GINER, J. /TYCO LABS., INC./

PARRY, J. SWETTE, L. DATE- FEB. 1970 REAN- SEE

ALSO NASA-CR-97624

HQ-10537

Platinum-silver, palladium-gold, and platinum-gold alloys serve as oxygen reduction catalysts in high-current-density cells. Catalysts were tested on polytetrafluoroethylene-bonded cathodes and a hydrogen anode at an operating cell temperature of 80 degrees C.

B70-10148

DIFFUSION TECHNIQUE FOR LITHIUM-DOPED

SILICON

KENDALL, D. L. /TEX. INSTR., INC./ DATE- JUN.

1970 REAN- SEE ALSO NASA-CR-97077

GSFC-10827

Sample is doped by constructing a sandwich of five slices of silicon with lithium dopant deposited on the outside surfaces of the second and fourth slices and placing the sample in the middle. Upon heating, the lithium diffuses through the carrier slices and into the sample wafer.

B70-10149

TESTING DEVICE FOR VERIFYING THE

PERFORMANCE OF DIGITAL RECORDERS

WILSON, W. C. /BOEING CO./ DATE- JUN. 1970

KSC-10300

Test device, consisting of a pulse generator section and a manual program section, checks and calibrates digital recorder-printers. It is adaptable to other recorder configurations.

B70-10150

DETERMINATION OF DIFFUSION LENGTHS IN

SILICON BY AN X-RAY METHOD

LAMNECK, J. H., JR. DATE- SEP. 1970 REAN- SEE

ALSO NASA-TN-X-1894

LEWIS-10984

01 ELECTRONICS/ELECTRICAL

By calibrating X-ray machine with cells of known diffusion lengths, measurements on test cells can be made at rate of one every two minutes with standard deviation of less than two percent. test cells are compared with calibration cells whose diffusion lengths have been measured by an electron beam method.

B70-10151
HIGH ENERGY DENSITY ELECTROCHEMICAL CELL
BYRNE, J. J. /MONSANTO RES. CORP./ WILLIAMS, D. L. DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-90547 LEWIS-10969

Primary cell has an anode of lithium, a cathode containing dihaloisocyanuric acid, and a nonaqueous electrolyte comprised of a solution of lithium perchlorate in methyl formate. It produces an energy density of 213 watt hrs/lb and can achieve a high current density.

B70-10153
IMPROVED ALKALINE ELECTROCHEMICAL CELL
FLEISCHMANN, C. W. /LEESONA MOOS LAB./ OSWIN, H. G. OXLEY, J. E. DATE- FEB. 1970 GSFC-10792

Addition of lead ions to electrolyte suppresses zinc dendrite formation during charging cycle. A soluble lead salt can be added directly or metallic lead can be incorporated in the zinc electrode and allowed to dissolve into the electrolyte.

B70-10154
A NEW LOW-EXPANSION NONFLAMMABLE PRINTED CIRCUIT BOARD
KENNEDY, B. W. DATE- MAY 1970 M-PS-20408

Printed circuit board has a thermal coefficient of expansion similar to that of the electronic component leads. High-expansion composite materials are sandwiched between the outer layers of copper and woven fiber glass.

B70-10157
PIEZOELECTRIC TRANSDUCER
CONRAGAN, J. /CALIF. UNIV./ MULLER, R. S. DATE- JUL. 1970 HQ-10548

Transducer consists of a hybrid thin film and a piezoelectric transistor that acts as a stress-sensitive device with built-in gain. It provides a stress/strain transducer that incorporates a signal amplification stage and sensor in a single package.

B70-10172
A VAPOR BARRIER FOR COLD TESTING PRINTED CIRCUIT CARDS
CROSS, D. A. /BOEING CO./ MC NEILL, R. E. DATE- APR. 1970 M-PS-15115

Cold testing method prevents formation of frost on printed circuit boards and part holders during testing at sub-zero temperatures. Freon permits rapid attainment of the required testing temperature.

B70-10174
ELECTRONIC POSITION INDICATOR FOR LATCHING SOLENOID VALVES
FISCHER, R. FRYE, R. J. WINNER, H. L. DATE- APR. 1970 REAN- SEE ALSO NASA-TM-X-1760 LEWIS-10926

Electronic circuit connected to solenoid valve coils visually indicates the position of the valve stem. Transient suppression is provided to prevent damaging voltage spikes.

B70-10179
A 225 MHZ FM OSCILLATOR WITH RESPONSE TO 10 MHZ
SPON- INNOVATOR NOT GIVEN /AUBURN UNIV./ DATE- JUN. 1970 M-PS-14977

Frequency-modulated transistor oscillator is used in wideband television transmitters. It provides near-sinusoidal output waveforms and has good frequency stability.

B70-10180
AUDIO SIGNAL PROCESSOR
HYMER, R. DATE- JUN. 1970 MSC-12223

System provides automatic volume control for an audio amplifier or a voice communication system without introducing noise surges during pauses in the input, and without losing the initial signal when the input resumes.

B70-10181
TRANSISTOR BONDING PAD CONFIGURATION FOR UNIFORM INJECTION AND LOW INDUCTANCE
JACOBSON, D. S. /RCA/ DATE- MAY 1970 GSFC-10790

Modification of process for fabricating transistors, which comprises a metallization-pattern design for emitter and base areas together with a double bonding configuration for each emitter and base-bonding lead, improves uniformity of carrier injection in transistors and of reducing lead inductances at base-emitter terminals.

B70-10186
NONDISSIPATIVE OPTIMUM CHARGE REGULATOR
ROSEN, R. /HUGHES AIRCRAFT CO./ VITEBSKY, J. N. DATE- APR. 1970 REAN- SEE ALSO NASA-CR-79093 XGS-10439

Optimum charge regulator provides constant level charge/discharge control of storage batteries. Basic power transfer and control is performed by solar panel coupled to battery through power switching circuit. Optimum controller senses battery current and modifies duty cycle of switching circuit to maximize current available to battery.

B70-10188
HALL EFFECT ENCODING OF BRUSHLESS DC MOTORS
BERARD, C. A. /RCA/ FURIA, T. J. GOLDBERG, E. A. GREENE, R. C. DATE- MAY 1970 GSFC-10789

Encoding mechanism integral to the motor and using the permanent magnets embedded in the rotor eliminates the need for external devices to encode information relating the position and velocity of the rotating member.

B70-10190
DOPANT FOR SODIUM NIOBATE CAPACITOR DIELECTRIC
KANDLER, H. A. /TRW SYSTEMS GROUP/ RADKE, R. P. DATE- MAY 1970 REAN- SEE ALSO B68-10163 MSC-11773

Sodium niobate dielectric doped with barium titanate has potential application in integrated circuits with high packing densities and voltage levels below 5 to 8 volts.

B70-10191
FUSE-HOLDER CONCEPT EXPEDITES ELECTRONIC COMPONENT CHANGES
WINSLOW, D. J. DATE- APR. 1970 M-PS-20615

Mounting circuit components in fuse holders facilitates component changing and extends component life with an estimated fifty percent saving of breadboard test time. Glass sleeves of the fuse holders allow easy component identification.

B70-10192
NULL TYPE INSTRUMENT FOR SIMPLIFYING TWO DIMENSIONAL FIELD PLOTTING
DAMERON, C. E. WOOD, G. H., JR. DATE- APR. 1970 XLA-08493

Vacuum tube bridge operates in two modes, tracing and fixed potential. It reduces plotting time by fifty percent and improves measurement precision.

B70-10200
OHMIC DIODE
AEGERTER, S. /CALIF. UNIV. BOARD OF PAT./ LIBBY, W. F. DATE- APR. 1970 HQ-10534

Process produces linearly responding surface barrier diodes. Hydrogen-fired, conducting strontium titanate crystals provide linear characteristics. The process uses space charge

potentials and depletion layer phenomena to achieve conduction and insulation.

B70-10203

LOW POWER NAND GATE

LIN, H. C. /WESTINGHOUSE ELEC. CORP./ DATE- APR. 1970

M-FS-14487

Complementary p-n-p transistor, used as the load resistor in an integrated circuit, reduces the switching time and the steady state dc current, and allows for a lower supply voltage. Current limiting is achieved by a novel unity-gain transistor.

B70-10214

SHELF AND CYCLE LIFE EVALUATION OF SILVER-ZINC CELLS

BOGNER, R. S. UCHIYAMA, A. A. DATE- JUL. 1970

REAN- SEE ALSO NASA-SP-132

NPO-11258

Silver-zinc cells having a separator system of cross-linked high-density polyethylene with a methacrylic acid graft withstand corrosion when subjected to thermal sterilization treatments.

B70-10216

ULTRASTABLE REFERENCE PULSER FOR HIGH-RESOLUTION SPECTROMETERS

BRENNER, R. LENKSZUS, F. R. SIFTER, L. L.

STRAUSS, M. G. DATE- APR. 1970

ARG-10364

Solid-state double-pulse generator for a high resolution semiconductor detector meets specific requirements for resolution /0.05 percent/, amplitude range /0.1-13 MeV/, and repetition rate /0.1-1000 pulses per second/. A tag pulse is generated in coincidence with each reference pulse.

B70-10217

IMPROVED SHIELDING TERMINATION ADAPTER FOR ELECTRICAL CABLE CONNECTORS

VANASSE, M. A. /N. AM. ROCKWELL CORP./ DATE- APR. 1970

MSC-15565

Termination adapter replaces braid ring and ensures permanent attachment and grounding of sheath wires. The inner ferrule of the termination is slipped inside the exposed ends of the sheath wires and the outer ferrule is placed over the wires and crimped in place to secure the wires for grounding.

B70-10218

TECHNIQUE FOR PRODUCING BIPOLAR AND MOS FIELD EFFECT TRANSISTORS ON A SINGLE CHIP

GALLAGHER, R. C. /WESTINGHOUSE ELEC. CORP./

WILLIAMS, D. W. DATE- APR. 1970

MSC-13358

Several cycles of photoetching, dopant deposition, and drive-in produce selectively-doped regions and semiconductor junctions within a single chip.

B70-10219

LIQUID LEVEL SENSOR

MATICA, S. W. /N. AM. ROCKWELL CORP./ DATE- APR. 1970

M-FS-16648

Potentiometer-type pressure transducer improves liquid level sensing by using the pressure-induced motion of a diaphragm to alter the resistance of the sensor.

B70-10229

ELECTRO-OPTICAL TIME MARKER FOR HIGH-SPEED CAMERAS

COPELAND, J. T., JR. DATE- OCT. 1970

KSC-10294

Electro-optical device converts high-frequency electrical pulses into permanent optical records on film. Accurate, well defined images are formed of electronic pulses having repetition rates greater than 10,000 pulses/sec and pulse widths of 20 microseconds or less. Small electronic switch drives a silicon carbide electroluminescent diode.

B70-10232

TWO TERMINAL CURRENT LIMITER

DOUBT, L. S. DATE- OCT. 1970

NPO-11350

Two terminal device protects dc electronic circuits and experimental solid state devices, and replaces fuses and circuit breakers directly. The device consists of two transistors and two resistors and draws its necessary supply voltage from power source being protected. The limiter acts as a voltage regulator.

B70-10237

IMPROVED ULTRAVIOLET RESONANCE LAMP

BASS, A. M. /NBS/ DATE- SEP. 1970

ARC-10030

Removal of the seal area from the path of the lamp discharge eliminates the gradual deterioration of lithium fluoride window surfaces from condensation of products formed by interaction of a resonant rare-gas discharge with window sealing materials. The discharge is confined to the inner tube.

B70-10247

OPTICALLY ACTIVATED MAGNETIC RECORDING TAPE

MARKS, A. M. /MARKS POLARIZED CORP./ SHULMAN, A. DATE- NOV. 1970

GSFC-10275 GSFC-10276

Optically activated data storage medium visually and electromagnetically reproduces a recorded signal. In an electric field, particles in heat-fluidized thermoplastic layer form a visible image of the recorded signal. Refluidizing the thermoplastic layer erases the signals. Very high data packing densities are achieved.

B70-10249

A MINIATURE 1/4-INCH DIAMETER 24-PIN

PLUG AND RECEPTACLE

PHELPS, W. R. DATE- AUG. 1970

LANGLEY-10607

Miniature plug and receptacle, which eliminates the need for permanent fixed leads, is used on wind-tunnel force balances, in the interface connections of microelectronic modular assemblies, and in electric and electronic systems where subsystems must be removed or interchanged.

B70-10250

SWITCHING CIRCUITS WITH FAST RESPONSE AND

LOW POWER DRAIN

CANCRO, C. A. DATE- SEP. 1970

GSFC-10878

New logic circuits have response times no longer than 10 nanoseconds and drain only milliwatts of power. The family includes AND and NAND gates and forms the basis of all logic functions. The basic circuits are used in various types of digital-data-processing systems.

B70-10262

POWER SEMICONDUCTOR DEVICE WITH NEGATIVE

THERMAL FEEDBACK

BORKY, J. M. /MIT/ THORNTON, R. D. DATE- DEC. 1970

HQ-10577

Composite power semiconductor avoids second breakdown and provides stable operation. It consists of an array of parallel-connected integrated circuits fabricated in a single chip. The output power device and associated low-level amplifier are closely coupled thermally, so that they have a predetermined temperature relationship.

B70-10264

COLOR IDENTIFICATION TESTING DEVICE

BRAWNER, E. /BENDIX CORP./ MARTIN, R. PATE, W. DATE- APR. 1970

KSC-10278

Testing device, which determines ability of a technician to identify color-coded electric wires, is superior to standard color blindness tests. It tests speed of wire selection, detects partial color blindness, allows rapid testing, and may be administered by a color blind person.

01 ELECTRONICS/ELECTRICAL

B70-10266

MOTOR BRUSH WEAR MEASURED WITH STRAIN GAGES
FARRELL, W. T. /RCA/ PEEK, C. R. DATE- MAY 1970
GSFC-10886

Balanced bridge circuit, supplied with low-voltage direct current and connected to a readout device, measures remaining brush material, rate of brush wear, armature runout, and brush signature.

B70-10267

EQUIPMENT-TOLERANT RANGE CODE DEMODULATION

METHOD - A CONCEPT

WELTER, N. /MOTOROLA, INC./ DATE- OCT. 1970

M-FS-13987

Demodulation loop of automatic range-measuring system uses reference signal wave of locally generated pseudo-noise plus square wave of same period as the clock. Phase instabilities in IF amplifiers appear only as gain changes in the loop, and do not cause errors in range determination.

B70-10275

AN INVESTIGATION OF THE STRENGTH OF
ALUMINUM WIRE USED IN INTERGRATED CIRCUITS

ADAMS, M. A. DATE- AUG. 1970

NPO-11219

Microloop pull test is developed to stress wire loops in situ until failure. The applied loads, the nature of the fracture, and its location are recorded. This test also stresses the wire bonds.

B70-10276

TEMPERATURE-INDEPENDENT RESISTOR FOR
MICROELECTRONIC CIRCUITS

AEGERTER, S. /CALIF. UNIV./ LIBBY, W. F. DATE-
MAY 1970

HQ-10382

Heat treating insulating crystals in gaseous hydrogen atmosphere produce resistive device which is temperature-independent from 77 to 295 degrees K. Increasing the concentration of hydrogen within the crystal yields semiconductor, hybrid, and metallic conduction characteristics which are combined with a depletion layer at the surface.

B70-10277

FILM BREAKERS PREVENT MIGRATION OF AQUEOUS
POTASSIUM HYDROXIDE IN FUEL CELLS

HESS, P. D. /ALLIS-CHALMERS MANUFACTURING CO./
DATE- MAY 1970

MSC-13174

Electrolyte film breakers made from polytetrafluoroethylene are installed in the reactant and water vapor removal outlets of each cell and sealed by elastomers. Use of these devices in the water vapor removal cavity outlets prevents loss of KOH solution through film migration during water removal.

B70-10278

P-I-N DIODE SWITCH

VANEK, C. S. DATE- APR. 1970

GSFC-10661

Solid state switches use the same voltage and power supply as the RF amplifier. This simplifies circuit design and reduces input power requirements.

B70-10286

REMOTELY ACTUATED RELEASE MECHANISM

ROTTA, J. W., JR. DATE- MAY 1970

NPO-10698

Release mechanism for actuation of automatic device operates on system of restrained energy force, which is automatically released by electrical charge that may be applied by manual switch or, in remote application, by RF impulse, received by conventional electronic circuitry.

B70-10298

HALL EFFECT TRANSDUCER GIVES ELECTRICAL
OUTPUT PROPORTIONAL TO METER SHAFT

ROTATION

SMITH, D. DATE- JUN. 1970

LANGLEY-10620

Electrical output transducer for measuring angular displacements does not introduce frictional contact between stationary and moving parts. It

produces output voltages directly proportional to small rotary shaft displacements.

B70-10303

SIMPLE, ACCURATE TEMPERATURE-MEASURING
INSTRUMENT

MC FADIN, L. W. DATE- DEC. 1970

MSC-12327

Compact instrument, composed of integrated circuits and a temperature-sensitive platinum resistor, measures temperature over a wide dynamic range. Ultimate accuracy is limited by nonlinearity of the platinum resistor. With proper calibration and current regulation to within 0.01 percent, a measurement accuracy of 0.05 percent can be achieved.

B70-10304

AN EXPLOSION-PROOF BATTERY CASE

KEATHLEY, W. H. DATE- DEC. 1970

MSC-12335

Battery case, equipped with relief valve, connector, and two covers, separates the explosive mixture from all potential spark sources. Bottom ends of vent tubes are cemented into cell vents and upper ends fit through the gas barrier cover. This arrangement isolates generated gases from the electric power.

B70-10305

ONE-SHOT MULTIVIBRATOR WITH COMPLEMENTARY
METAL-OXIDE-SEMICONDUCTOR COMPONENTS

ONEILL, R. W. /LOCKHEED ELECTRON. CO./ DATE-

APR. 1970

MSC-13492

Breadboard model is tuned to produce output pulses from one microsecond up to several seconds in width with up to 95 percent duty cycle, and with lower power consumption than previously existing circuits.

B70-10314

TWO TECHNIQUES FOR DIGITAL FILTER DESIGN

CARROLL, C. C. /AUBURN UNIV./ JONES, J. W., JR.

NAGLE, H. T., JR. DATE- AUG. 1970

M-FS-20015 M-FS-20016

Digital controllers, one using a special-purpose computer and the other using a combination of digital and analog techniques, are designed around /1/ computers that simulate the transfer function and interface with the system, and /2/ analog and digital circuits, converters, amplifiers, constant multipliers, and delay lines that form a digital filter.

B70-10323

COULOMETER BATTERY STATE-OF-CHARGE INDICATOR

BIRCHENOUGH, A. SECUNDE, R. DATE- NOV. 1970

REAN- SEE ALSO NASA-TN-D-5773

LEWIS-11083

Mercury-column electrochemical coulometer is a linear ampere-hour integrating device consisting of a sealed glass tube containing two columns of mercury separated by a gap containing an electrolyte. The drive circuit uses operational amplifier techniques to match nonlinear charge-discharge characteristics of an alkaline battery.

B70-10326

STRAIN GAGE LOAD MEASURING DEVICE - A

CONCEPT

MICKEY, F. E. /NORTHROP VENTURA/ DATE- SEP. 1970

MSC-13385

Instrumenting tape members of textile parachutes to determine load capability is accomplished by mounting strain-gage instrumented metal plates to the tape by stiff rubber pads. The pads permit gradual transfer of the load from the tape to the plates without stress concentrations in the tape.

B70-10328

SAFE/ARMED EXPLOSIVE SQUIB

PARKER, L. C. DATE- JUN. 1970

XLA-10372

Safe/Armed Firing-Type Initiator /SAFTI/ combines the safety features of existing electromechanical safe-arm devices with the weight and size of a standard initiator and the functioning speed of a relay.

01 ELECTRONICS/ELECTRICAL

B70-10329

LOW PRESSURE ARC ELECTRODE
LENN, P. D. /ELECTRO-OPT. SYSTEMS, INC./
RICHTER, R. DATE- AUG. 1970
ARC-10012

Reducing the pressure in the vicinity of the arc attachment point by allowing the gas to flow through a supersonic nozzle minimizes local heating rates, prevents ablation, and increases the efficiency of coaxial gas-flow arcs.

B70-10335

SELF-CONTAINED MINIATURE ELECTRONICS
TRANSCIEVER PROVIDES VOICE COMMUNICATION
IN HAZARDOUS ENVIRONMENT
CRIBB, H. E. DATE- SEP. 1970
KSC-10164

Two-way wireless voice communications system is automatic, provides freedom of movement, allows for complete awareness of the environment, and does not present any additional hazards such as activation of electromagnetic sensitive devices.

B70-10336

PENTAL CIRCUIT MAY BE USED IN
CONVERSIONLESS DECIMAL COUNTER
GALVIN, D. H., JR. /MIT/ DATE- JUN. 1970
HQ-10146

Pental counter circuit, a five-stage ring of NOR gates, is used with a standard flip-flop and several AND gates to construct a decimal counter. Pental circuit eliminates the conversion circuitry which is used when binary circuits generate numeric information.

B70-10337

A SELF-TUNING FILTER
DEBOO, G. J. REDLUND, R. C. DATE- JUL. 1970
ARC-10264

Self-tuning filter automatically adjusts its center frequency to track signal frequency. This permits the use of a filter with a bandwidth smaller than the range of input signal frequencies.

B70-10338

CONSTANT-AMPLITUDE RC OSCILLATOR
KERWIN, W. J. WESTBROOK, R. M. DATE- SEP. 1970
ARC-10262

Sinusoidal oscillator has a frequency determined by resistance-capacitance /RC/ values of two charge control devices and a constant-amplitude voltage independent of frequency and RC values. RC elements provide either voltage-control, resistance-control, or capacitance-control of the frequency.

B70-10340

A BATTERY SIMULATOR
FERRELL, S., JR. /BOEING CO./ LAHR, N. DATE-
AUG. 1970
KSC-10172

Simulator verifies proper operation of a battery cell voltage-monitoring device. It also contains variable ac voltage to ascertain that a battery scanner will perform its function at all possible ac voltages.

B70-10345

TWO-AXIS FLUX GATE MAGNETOMETER
ACUNA, M. H. /FAIRCHILD HILLER CORP./ PELLERIN,
C. J. DATE- NOV. 1970
GSFC-10441

Magnetometer uses single sensing head to measure magnetic flux density along two axes simultaneously. The sensor head consists of permalloy core and four windings. Two windings perform a multivibrator function, the two remaining windings sense magnetic fields. The smaller magnetometer performs same functions as more complex devices.

B70-10351

A TRANSFORMER OF CLOSELY SPACED PULSED
WAVEFORMS
NIEDRA, J. DATE- AUG. 1970 REAN- SEE ALSO
NASA-TN-D-5473
LEWIS-11045

Passive circuit, using diodes, transistors, and magnetic cores, transforms the voltage of

repetitive positive or negative pulses. It combines a pulse transformer with switching devices to effect a resonant flux reset and can transform various pulsed waveforms that have a nonzero average value and are relatively closely spaced in time.

B70-10365

REDUCING STREAK FILM DATA VIA ELECTRONIC
CROSS CORRELATOR
DICKERSON, R. A. /N. AM. ROCKWELL CORP./ DATE-
SEP. 1970
M-FS-18804

Continuous /nonframing/ motion picture projector, two photocells, a cross-correlator, and a ground glass screen where the photocells intercept the stream image determine the time delay between successive streak images. Velocities corresponding to the streaks are determined from the delay together with the distance separating the photocells.

B70-10370

PULSE-RATE AVERAGING CIRCUIT
JESSEE, R. D. /WESTINGHOUSE ELEC. CORP./ DATE-
SEP. 1970
GSFC-10718

Averaging circuit provides a secondary control signal during inoperative periods of an intermittent primary control system. It can also provide an average pulse rate over a fixed time interval, such as in a digital frequency meter.

B70-10372

INTEGRATED CIRCUIT RANDOM-ACCESS MEMORY
DECODER
KATZ, S. /RCA/ DATE- OCT. 1970 REAN- SEE ALSO
NASA-CR-86115
ERC-10211

Decoder circuit with complementary-symmetry circuit configuration composed of MOS and n-p-n bipolar devices minimizes power consumption. Emitter-follower drive scheme results in low power dissipation and high speed operation.

B70-10373

COMPLEMENTARY-MOS BINARY COUNTER WITH
PARALLEL-SET INPUTS
KELLER, K. R. /RCA/ YUNG, A. K. DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-86171
ERC-10122

Metal oxide semiconductor four-stage binary counter contains reset capability as well as four parallel-set inputs gated in by a logic signal. Parallel-set inputs permit setting the counter into any of sixteen possible states.

B70-10376

RADIOMETRIC ABSOLUTE NOISE-TEMPERATURE
MEASUREMENT SYSTEM FEATURES IMPROVED
ACCURACY AND CALIBRATION BASE
BROWN, W. EWEN, H. /EWEN KNIGHT CORP./
HAROULES, G. DATE- SEP. 1970 REAN- SEE ALSO
NASA-TR-R-271
ERC-90066

Radiometric receiver system, which measures noise temperatures in degrees Kelvin, does not require cryogenic noise sources for routine operation. It eliminates radiometer calibration errors associated with RF attenuation measurements. Calibrated noise source is required only for laboratory adjustment and calibration.

B70-10378

COPLANAR INTERCONNECTION MODULE
STEWART, R. D. /GE/ WINDSOR, H. F. DATE- AUG.
1970 REAN- SEE ALSO NASA-CR-86039
ERC-10237

Module for interconnecting a semiconductor array to external leads or components incorporates a metal external heat sink for cooling the array. Heat sink, extending down from the molded block that supports the array, is immersed in a liquid nitrogen bath which is designed to maintain the desired array temperature.

B70-10380

CONTACT MATERIAL FOR PRESSURE-SINTERING
FERRITES

01 ELECTRONICS/ELECTRICAL

WENTWORTH, C. /RCA/ DATE- SEP. 1970
ERC-10213

Pressure-sintering, in which the unfired laminated ferrite plane is placed between two flat punches and pressed during firing, reduces lateral firing shrinkage to less than one percent. A decrease in thickness of the laminate produces the required volume shrinkage. Phlogopite is the most suitable contact material investigated.

B70-10382
BIMORPH PIEZOELECTRIC DEVICE FUNCTIONS AS
FLAPPER VALVE
VAN DER HEYDEN, J. /MARTIN MARIETTA CORP./ DATE-
SEP. 1970 REAN- SEE ALSO NASA-CR-86105
ERC-10082

Flapper valve using a bimorph piezoelectric ceramic bender converts an electrical input into a pneumatic output signal capable of operating fluidic logic elements in a decoder and display system.

B70-10383
SOLID STATE BISTABLE POWER SWITCH
BARTKO, J. /ISOTOPES INC./ SHULMAN, H. DATE-
SEP. 1970 REAN- SEE ALSO NASA-CR-86103
ERC-10290

Tin and copper provide high current and switching time capabilities for high-current resettable fuses. They show the best performance for trip current and degree of reliability, and have low coefficients of thermal expansion.

B70-10384
QUASI-OPTICAL EQUIVALENT OF WAVEGUIDE SLIDE
SCREEN TUNER
KURPIS, G. P. /CUTLER-HAMMER AIRBORNE INSTR.
LAB./ DATE- AUG. 1970 REAN- SEE ALSO
NASA-CR-1453
ERC-10312

Tuner utilizes a metal plated dielectric grid inserted into the cross sectional plane of an oversized waveguide. It provides both variable susceptance and variable longitudinal position along the waveguide to provide a wide matching range.

B70-10385
NONEQUAL ITERATION DIRECTIONAL FILTERS
PERMIT SELECTIVE CLEARANCE OF RIPPLES
IN PASSBAND CIRCUITS
KURPIS, G. P. /CUTLER-HAMMER AIRBORNE INSTR.
LAB./ DATE- AUG. 1970 REAN- SEE ALSO
NASA-CR-1453
ERC-10313

Modified directional filter is comprised of alternate pairs of dielectric and air gap filter sections with unequal electrical lengths. Filter provides more flexibility in choosing dielectric material thickness and permits switching from specially ground to standard thicknesses.

B70-10387
FLAT CONDUCTOR CABLE CONNECTOR WITH
CONTACT SEPARATION SEAL
ANGELE, W. DATE- AUG. 1970 REAN- SEE ALSO
NASA-SP-5043, NASA-SP-5924/01/
M-FS-20757

Cable connector is developed in which each pair of contact elements is isolated by plastic cells and the mating interface is sealed by an elastic gasket. So insulated, the connector may be operated under high vacuum conditions at voltages up to 600 V ac without electrical leakage or intercontact ionization.

B70-10392
DUAL CURRENT READOUT FOR PRECISION PLATING
ICELAND, W. F. /N. AM. ROCKWELL CORP./ DATE-
SEP. 1970
MSC-15673

Bistable amplifier prevents damage in the low range circuitry of a dual scale ammeter. It senses the current and switches automatically to the high range circuitry as the current rises above a preset level.

B70-10393
SIGNAL PHASE SWITCHES OFFER GREATER
DYNAMIC RANGE

CROW, R. B. DATE- OCT. 1970 REAN- SEE ALSO
NASA-CR-90199
NPO-10709

Circuit, placed in the signal path of a closed-loop receiver to modulate telemetered data in the 10-MHz spectrum, improves signal-to-noise ratio by 3 db in a communication receiver. The switch enables bandwidth reduction which reduces noise overload on the following stages, giving the system greater dynamic range.

B70-10407
THUMB-ACTUATED CONTROL DEVICE
HADLAND, W. O. IWASAKI, N. DATE- SEP. 1970
ARC-10019

Rotary potentiometer device on the spoke of an aircraft steering wheel provides servo control of certain flight characteristics with no visual attention and a minimum of operational movement.

B70-10414
TRANSISTOR CURRENT AND VOLTAGE LIMITING
SWITCH
HILBERT, E. E. DATE- SEP. 1970
NPO-11166

Limiting circuit protects the main power supply of electronic modules and limits the current drawn by each module should a short circuit occur. It limits current within one mA when used with direct current of either polarity, or with pulse or ac power sources from direct current to 100 kHz.

B70-10425
EFFICIENT/RELIABLE DC-TO-DC INVERTER CIRCUIT
PACIUTTI, E. R. DATE- NOV. 1970 REAN- SEE ALSO
NASA-TM-X-63118
XGS-06226

Feedback loop, which contains an inductor in series with a saturable reactor, is added to a standard inverter circuit to permit the inverter power transistors to be switched in a controlled and efficient manner. This inverter is applicable where the power source has either high or low impedance properties.

B70-10437
LASER SCRIBING OF SILICON WAFERS
CALIHAN, C. /SPACERAYS, INC./ DATE- OCT. 1970
ERC-10386

Laser scribing eliminates microcracking at scribe line intersections, minimizes or eliminates preparation of scribe channels, and increases yield during the breaking process. Rapid overlapping of spots in the form of a line permits scribing speeds of 1.5 to 2.5 in./sec at 50 pulses/sec.

B70-10440
LUMINESCENT SCREEN COMPOSITION AND
APPARATUS
HILBORN, E. H. DATE- OCT. 1970
ERC-10010

Ultraviolet light projects photographically produced images on a screen composed of a mixture of linear and nonlinear phosphors whose spectral emissions are different. This allows the display of polychromatic luminescent images, which gives better discrimination of the objects being viewed.

B70-10448
MULTIPOINT SEMICONDUCTOR DEVICES
HOLMSTROM, F. R. RINDNER, W. DATE- DEC. 1970
ERC-10293

Device, made of a variety of semiconductors, incorporates three or more terminals. Between at least two terminals, switching action occurs. The other terminal pair performs either another switching function or a control function. This device is useful for computer-logic or memory applications.

B70-10454
MULTILAYER SCREEN GIVES CATHODE RAY TUBE
HIGH CONTRAST
BULLINGER, H. HILBORN, E. H. DATE- SEP. 1970
ERC-10217

Fabrication method for cathode ray tubes uses low-cost siloxane resin formulations. The resins contain sufficient methyl or phenyl groups for solubility in organic solvents. After

vaporization and baking, the polymerized material is stable under vacuum and under temperatures required for tube fabrication.

B70-10459
HIGH-TEMPERATURE ELECTRIC STATOR
KUESER, P. /WESTINGHOUSE ELEC. CORP./ LINDBERG,
R. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-1592
LEWIS-10889

Thermal vacuum tests are conducted on high-temperature stator without a rotor. Electrical characteristics remained satisfactory during tests, insulation improved slightly, and conductor resistance remained constant. The assembly included a bore seal for hermetically sealing the stator from the rotor cavity.

B70-10460
FABRICATION OF ELECTROACOUSTIC RF AMPLIFIERS
TRENT, R. L. DATE- SEP. 1970
ERC-10266

Anodic bonding of a lithium niobate piezoelectric crystal over a silicon-on-sapphire structure with the crystal mounted over a closely controlled oxide provides a point-contact mount for two rectangular slabs /one piezoelectric and the other a silicon semiconductor/ within 600 A of each other.

B70-10462
ELECTRODEPOSITED INORGANIC SEPARATORS FOR ALKALINE BATTERIES
CARSON, W. N., JR. /GE/ CONSIGLIO, J. A. MC
QUADE, J. M. DATE- SEP. 1970 REAN- SEE ALSO
NASA-CR-84002
GSFC-10943

Coating electrodes of silver-cadmium cells with thermostable electrodeposits of calcium hydroxide or magnesium hydroxide reduces silver migration and increases cell life. Absence of organic matter enables assembled cells to be sterilized without oxidation of the material of the separators.

B70-10470
LOAD CELL FOR THERMIONIC CONVERTER TESTS
BREITWIESER, R. MANISTA, E. J. DATE- SEP. 1970
LEWIS-11068

Stable, low duty cycle transistorized emitter follower load cell controls and absorbs large currents at low voltages. The use of energy storage in capacitors reduces auxiliary power source requirements. Low duty cycle pulse mode of operation reduces the average power handling requirement of all components.

B70-10474
VISIBLE LIGHT ELECTROLUMINESCENT DIODES OF INDIUM-GALLIUM PHOSPHIDE
CLOUGH, R. /RCA/ RICHMAN, D. TIETJEN, J. DATE-
OCT. 1970 REAN- SEE ALSO NASA-CR-86192,
NASA-CR-110194
ERC-10303

Vapor deposition and acceptor impurity diffusion techniques are used to prepare indium-gallium phosphide junctions. Certain problems in preparation are overcome by altering gas flow conditions and by increasing the concentration of phosphine in the gas. A general formula is given for the alloy's composition.

B70-10476
VISUAL DISPLAY PANEL FUNCTIONS AS COMPUTER INPUT/OUTPUT DEVICE
HILBORN, E. H. DATE- OCT. 1970
ERC-10223

Display panel permits information entry and erasure using a probe, and has an inherent storage capability for use on time-shared systems. Data input need not be online. Other advantages include direct display of input and output, simplicity, and low fabrication cost.

B70-10477
GLASS-TO-METAL BONDING PROCESS IMPROVES STABILITY AND PERFORMANCE OF SEMICONDUCTOR DEVICES
TRENT, R. L. DATE- OCT. 1970 REAN- SEE ALSO
NASA-CR-85026
ERC-10264

Anodic bonding of glass coverslips to photodiodes and photovoltaic devices eliminates the need for adhesive. The process requires relatively low temperatures /less than 560 degrees C/ and the metals and glass remain solid throughout the bonding process.

B70-10482
IMPROVED MODIFIED TURNSTILE ANTENNA
LEMSON, P. H. DATE- AUG. 1970
MSC-12209

Improved antenna design embodies the principles of turnstiling, broadbanding, and delta dipole matching. Antenna is useful in commercial broadcast applications.

B70-10483
A CONCEPTUAL CURRENT SURGE PROTECTOR FOR INCANDESCENT LAMPS
MACOMBER, G. A. /N. AM. AVIATION CORP./ DATE-
AUG. 1970
M-PS-16658

Negative-temperature coefficient device /thermistor/ in series with a lamp filament alleviates high filament surge current during initial application of power. The thermistor should be selected for a cold resistance approximately equal to one fourth of the normal hot resistance of the filaments to be protected.

B70-10488
ELECTRICAL TEST WIRE ATTACHMENT DEVICE
FERRY, R. T. /BOEING CO./ RABB, L. W. DATE-
SEP. 1970
KSC-10562

Test lead wire attachment quickly and securely engages screw head by expansion against the side walls of the screw head slot. Heat shrinkable tubing is used for the forward and shaft ends to insulate the device from accidental contact.

B70-10492
SOLID STATE VARIABLE TIME DELAY
FITZGERALD, T. M. DATE- NOV. 1970
ERC-10032

Variable time delay line does not require use of a magnetic field to control a time delay, and can both amplify and delay a signal. Device is inexpensive and space saving, it does not require mechanically moving components, eliminating detrimental vibrations in a sensitive environment.

B70-10494
CONTROLLED CURRENT INDUCTORS
THALER, S. DATE- NOV. 1970
ERC-10139

Magnetic permeability and shape of special core inserts are varied to produce desired changes in saturation characteristics of current dependent inductor, thus improving its inductance-to-current properties. Materials and saturation levels of the core pieces are selected to permit a wide variety of relationships between inductance and current.

B70-10495
SEMICONDUCTOR COOLING BY THIN-FILM THERMOCOUPLES
TICK, P. A. VILCANS, J. DATE- OCT. 1970
ERC-10149

Thin-film, metal alloy thermocouple junctions do not rectify, change circuit impedance only slightly, and require very little increase in space. Although they are less efficient cooling devices than semiconductor junctions, they may be applied to assist conventional cooling techniques for electronic devices.

B70-10498
A POWER SEMICONDUCTOR TEST CIRCUIT WITH REDUCED POWER REQUIREMENTS
BEEN, J. F. DATE- DEC. 1970
LEWIS-11175

Switching circuit utilizing silicon controlled rectifier reduces input power requirements normally associated with testing power semiconductors in an operational type mode. Circuit alleviates problems of inaccessibility, lack of large amounts of power, physical size of power resistors, wiring, and heat generation.

01 ELECTRONICS/ELECTRICAL

B70-10499

THERMIONIC TRIODE GENERATES AC POWER

KNIAZZEH, A. G. P. SCHARZ, F. C. DATE- NOV. 1970
ERC-10284

Electrostatic grid controls conduction cycle of thermionic diode to convert low dc output voltages to high ac power without undesirable power loss. An ac voltage applied to the grid of this new thermionic triode enables it to convert heat directly into high voltage electrical power.

B70-10500

P-N JUNCTIONS FORMED IN GALLIUM ANTIMONIDE

CLOUGH, R. /RCA/ RICHMAN, D. TIETJEN, J. DATE- NOV. 1970
ERC-10302

Vapor phase deposition process forms a heavily doped n-region on a melt-grown p-type gallium antimonide substrate. HCl transports gallium to the reaction zone, where it combines with antimony hydride and the dopant carrier, hydrogen telluride. Temperatures as low as 400 degrees C are required.

B70-10505

CHARACTERISTICS OF STEP-RECOVERY-DIODE

FREQUENCY MULTIPLIERS

SPON- INNOVATOR NOT GIVEN /RYAN AERON. CO./ DATE- DEC. 1970
M-FS-20558

Investigation into the uses of step-recovery diodes /SRD's/ leads to the development of necessary circuitry for using fast current-switching capabilities of SRD's in frequency multiplication, the design of solid-state X-band transmitters employing SRD multipliers, and the use of SRD multipliers in a phased-array receiving antenna.

B70-10508

LOG AMPLIFIER INSTRUMENT MEASURES

PHYSIOLOGICAL BIOPOTENTIALS OVER WIDE

DYNAMIC RANGE

KADO, R. T. /CALIF. UNIV., LOS ANGELES/ DATE- NOV. 1970
ARC-10032

To record biopotentials with extreme dynamic ranges, biopotential inputs are capacitatively coupled to a miniature, low power, solid-state signal conditioner consisting of a two-stage differential preamplifier that has a low noise figure. The output of the preamplifier uses diodes to provide an overall gain which is nearly logarithmic.

B70-10511

METAL DETECTOR SYSTEM

LEE, R. D. DATE- NOV. 1970
ARC-10265

Signal voltage resulting from the disturbance of an electromagnetic field within the volume of a sensitive area is compared with a reference ac voltage for polarity information, which identifies the material. System output amplitude and polarity indicate approximate size and type of metal, respectively.

B70-10515

FAULT DETECTION MONITOR CIRCUIT PROVIDES

SELF-HEAL CAPABILITY IN ELECTRONIC

MODULES - A CONCEPT

KENNEDY, J. J. /IBM CORP./ DATE- SEP. 1970
KSC-10394

Self-checking technique detects defective solid state modules used in electronic test and checkout instrumentation. A ten bit register provides failure monitor and indication for 1023 comparator circuits, and the automatic fault-isolation capability permits the electronic subsystems to be repaired by replacing the defective module.

B70-10521

EXTENDED-LIFE MAGNETIC RECORDING HEADS

KERN, J. D. /APPL. MAGNETICS CORP./ VODICKA, V. W. DATE- SEP. 1970

GSFC-10097

Recording head has standard ferrite core directly coated with a thin film of a magnetic alloy composed of aluminum, iron, and silicon. Coated

head has a lifespan from five to ten times longer than that of conventional heads and shows superior inductance characteristics and frequency response.

B70-10524

LATCHING OVERCURRENT CIRCUIT BREAKER

MOORE, M. L. DATE- SEP. 1970
NPO-11131

Circuit breaker consists of a preset current amplitude sensor, and a lamp-photo-resistor combination in a feedback arrangement which energizes a power switching relay. The ac input power is removed from the load at predetermined current amplitudes.

B70-10530

INEXPENSIVE AUTOMATIC RANGING FOR DIGITAL

VOLTMETERS AND FREQUENCY COUNTERS

ROLLER, R. F. /WESTINGHOUSE ASTRONUCL. LAB./ DATE- OCT. 1970
NUC-10240

Seven integrated circuits incorporated at very low cost into frequency counters and digital voltmeters performing a voltage-to-frequency conversion permit automatic range changing. Extra decades are switched into and out of the counting chain as a function of the counter during the previous counting period.

B70-10533

ELECTRONIC FLAW SIMULATOR FOR EDDY CURRENT

PROBE CALIBRATION

ALMASY, L. J. /WESTINGHOUSE ASTRONUCL. LAB./ CONFER, C. D. DATE- OCT. 1970
NUC-10211

Electronic flaw simulator cycled into the eddy current system eliminates errors in probe calibration. A discrimination level reference established in the probe permits recognition of those flaws in materials with an equivalent volume equal to or greater than the reference.

B70-10534

CIRCUIT MINIMIZES CURRENT DRAIN CAUSED BY

NEON INDICATOR LAMPS

DRYLIE, C. D. /WESTINGHOUSE ASTRONUCL. LAB./ SHAW, W. J. DATE- OCT. 1970
NUC-10157

Circuit lights neon lamp by back leakage current of the driving transistor, rather than by the transistors saturation or **on-state** current, thereby eliminating lowering of the voltage necessary for indication. Circuit has operating speed greater than indication circuit using a saturation principle and aids in power rationing.

B70-10541

CIRCUIT SUPPRESSES SPURIOUS SIDEBANDS

READY, P. J. /TRW SYSTEMS GROUP/ DATE- NOV. 1970
MSC-13425

Circuitry requires modulated subcarrier to be split, part going to a phase modulator, and part going to a new circuit which utilizes a square law detector, a balanced mixer, and an amplifier to remove spurious sidebands. A summer recombines the two outputs, and final signal no longer includes spurs.

B70-10552

HIGH-TEMPERATURE, LONG-TERM DRIFT OF

PLATINUM-RHODIUM THERMOCOUPLES

SZANISZLO, A. J. DATE- OCT. 1970 REAN- SEE ALSO NASA-TN-D-5287
LEWIS-11111

Contamination of thermocouples is minimized by use of pure alumina insulators and a controlled low-impurity-level high-vacuum environment. Average thermal electromotive force change for platinum-rhodium thermocouples was -2.8 deg K after 3700 hours exposure to a mean temperature of 1530 deg K.

B70-10553

CONNECTOR LOCKING DEVICE

RABB, L. W. /BOEING CO./ DATE- DEC. 1970
KSC-10537

Slidable spring-loaded locking device eliminates need for safety wiring. Locking device is placed between the connector plug and connector

01 ELECTRONICS/ELECTRICAL

receptacle. The threaded plug cannot vibrate loose because the insert is wedged into slots formed on the outer diameter of the receptacle.

B70-10560

ECONOMICAL PRINTED CIRCUIT FRONT PANEL FOR COMPUTER USE

NEWMAN, J. /IBM/ DATE- NOV. 1970 REAN- SEE ALSO

B70-10561

KSC-10573

Techniques for preparing printed circuit boards are used to provide an alternate method for producing panel symbology for ground computer test trap. After processing, the panel unit is either solder or gold plated.

B70-10562

DIGITAL INPUT IS BUFFERED TO REAL-TIME ANALOG DISPLAY

BOWER, K. F. DATE- NOV. 1970

KSC-10397

Buffering technique utilizes nine-bit binary counter and holding register of eight flip-flops. These flip-flops form the memory device that allows precise asynchronous conversion of the digital source data. Counter generates a waveform which is passed through a low pass filter to recover data in analog form.

B70-10565

REDUNDANT ELECTRONIC CIRCUIT PROVIDES FAIL-SAFE CONTROL

ARCHER, J. W. /AEROJET-GEN. CORP./ DATE- NOV. 1970

NUC-10389

Circuit using dual control amplifiers and dual position demand potentiometers powered from separate sources is used for reliable hydraulic valve controller that prevents closure of valve when control circuits fail, and maintains valve control to close tolerance for more common modes of controller failure.

B70-10569

FLEXIBLE ELECTRICAL CONDUCTORS FOR HIGH-TEMPERATURE SWITCHGEAR

KOUTNIK, E. A. MUELLER, L. A. SNIDER, W. E.

DATE- OCT. 1970 REAN- SEE ALSO NASA-TM-X-1986

LEWIS-11109

Arch-shaped conductors fabricated from flat strips of beryllium oxide dispersion-strengthened copper alloy serve as flexible electrical connectors capable of operating in 1000 deg F temperature range, under vacuum conditions for periods of 10,000 hours or more without failure.

B70-10570

HIGH-ACCURACY DETECTOR FOR LASER RADAR

AMMON, G. /RCA CORP./ DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-92485

MSC-13275

Signal processing technique permits accurate timing of pulse position independent of pulse amplitude. Technique utilizes differentiator, limiter amplifier, Schmitt trigger, and monostable multivibrator to produce standard-width pulse whose leading edge corresponds with the maximum of the received signal. This pulse stops the range counter.

B70-10579

SOLID STATE REMOTE CIRCUIT SELECTOR SWITCH

PETERSON, V. S. DATE- OCT. 1970

LEWIS-10387

Remote switching circuit utilizes voltage logic to switch on desired circuit. Circuit controls rotating multi-range pressure transducers in jet engine testing and can be used in coded remote circuit activator where sequence of switching has to occur in defined length of time to prevent false or undesired circuit activation.

B70-10584

IMPROVED COVER FOR CADMIUM SULFIDE SOLAR CELLS

ANAGNOSTOU, E. BERNATOWICZ, D. T. SPAKOWSKI, A.

E. DATE- NOV. 1970 REAN- SEE ALSO

NASA-TM-X-1905

LEWIS-11003

Solar cell performance and radiation resistance is improved by application of 1-mil thickness of Teflon FEP protective material. Cells produce 30 percent more power than similar cells with conventional Kapton covers.

B70-10607

MICROBALANCE ACCURATELY MEASURES EXTREMELY SMALL MASSES

PATASHNICK, H. /DUDLEY OBS./ DATE- DEC. 1970

HQ-09962

Oscillating fiber microbalance has a vibrating quartz fiber as balance arm to hold the mass to be weighed. Increasing fiber weight decreases its resonant frequency. Scaler and timer measure magnitude of the shift. This instrument withstands considerable physical abuse and has calibration stability at normal room temperatures.

B70-10629

GAGE FOR MEASURING COASTAL EROSION AND SEDIMENTATION

CARPINI, T. D. MOUGHON, W. C. DATE- NOV. 1970

LANGLEY-10779

Underwater sand height gage, which measures heights up to 12 inches, is comprised of two standard flush-diaphragm pressure transducers. Gage is very sensitive to buried water heights and is useful as a research tool in study of wet earth and landslide phenomena.

B70-10630

BONDING OF STRAIN GAGES TO FIBER REINFORCED COMPOSITE PLASTIC MATERIALS

CHAMIS, C. C. HANSON, M. P. SERAFINI, T. T.

DATE- NOV. 1970

LEWIS-11151

Strain gage is installed during molding of composite and utilizes the adhesive properties of the matrix resin in the composite to bond the strain gage in place. Gages thus embedded provide data at all temperatures that the matrix can withstand.

B70-10643

CONSTANT CURRENT LOAD MATCHES IMPEDANCES OF ELECTRONIC COMPONENTS

ALEXANDER, R. M. /TRW SYSTEMS GROUP/ DATE- DEC. 1970

GSFC-10982

Constant current load with negative resistance characteristics actively compensates for impedance variations in circuit components. Through a current-voltage balancing operation the internal impedance of the diodes is maintained at a constant value. This constant current load circuit can be used in simple telemetry systems.

B70-10648

A COMPUTER PROGRAM FOR EVALUATING PROPELLANT HEATING AND RADIATION DOSAGE TO CREWS OF

NUCLEAR-POWERED ROCKET VEHICLES

LAHTI, G. P. DATE- DEC. 1970

LEWIS-10951

Program evaluates propellant heating in a nuclear rocket stage. Program code employs infinite-medium buildup factors to calculate gamma dosage and employs the Albert-Welton kernel to calculate the fast neutron dosage.

B70-10650

TECHNIQUE FOR LOWERING THE NOISE FIGURE IN RF AMPLIFIERS

BELLONO, A. F. /MIT/ DATE- DEC. 1970

HQ-10435

Low-level RF amplifiers are operated at noise figures at or near the theoretical minimum, while maintaining high-gain stability. Formulas for the minimum amplifier noise figure value are derived from the analytical noise-figure expression involving the parameters of the equivalent circuit representing the actual system.

B70-10651

AC-COUPLED ULTRAHIGH INPUT IMPEDANCE AMPLIFIER

BIRCHENOUGH, A. G. DATE- DEC. 1970

LEWIS-11154

Input impedances of several hundred megohms and input capacitances of less than one picofarad are achieved with a conventional unity gain core buffer

01 ELECTRONICS/ELECTRICAL

amplifier modified by addition of positive feedback. The circuit is stable over a temperature range of 25 to 70 deg C.

B70-10655

THERMOCOUPLE INSTALLATION IN THIN-WALLED TUBES

CURREN, A. N. WYCOFF, K. C. DATE- DEC. 1970
LEWIS-11222

Brazing process attaches thermocouples to slot in type-347 stainless steel tube flush around its circumference. Electrolytic flashing with gold enhances brazing process. This installation procedure does not significantly change calibration of thermocouples used and does not cause major wear spots in the thin-walled devices.

B70-10684

SMALL, EFFICIENT POWER SUPPLY FOR XENON LAMPS
GOODWIN, J. E. /MARTIN-MARIETTA CORP./ DATE- DEC. 1970
MSC-13637

Device, which operates from 28 V dc, has four sections, a preregulator, a dc-to-dc converter, a current regulator, and a high voltage starter. The unique characteristics of the individual sections are described.

B70-10687

COMPOSITE METAL-OXIDE DEVICE HAS VOLTAGE SENSITIVE CAPACITANCE

MATTAUCH, R. J. /VA. UNIV./ VIOLA, T. J., JR.
DATE- DEC. 1970
HQ-10594

Device with step function variation of the capacitance is useful for voltage-controlled oscillator circuits and as a voltage-sensitive switch. Simplicity of construction makes the device suitable for large-scale integration, microelectronic circuits.

B70-10689

CIRCUIT MODIFICATION AIDS IN ATOMIC PARTICLE DISCRIMINATION

BLUE, J. W. SHOOK, D. F. DATE- DEC. 1970
LEWIS-11155

Circuit, using a bialkali photomultiplier tube and liquid scintillator, eliminates disadvantages of Owen circuit. It distinguishes between recoil protons /energies of 200 keV/ and Compton electrons /energies of 20 keV/.

B70-10696

ADVANCES IN ELECTROMETER VACUUM TUBE DESIGN
SPON- INNOVATOR NOT GIVEN /RAYTHEON CO./ DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-96797

GSFC-10729 GSFC-10730 GSFC-10731

Single-ended, miniature-cathode tube with a relatively low grid current level is constructed. Adequate cathode temperature at relatively low heater power drain is provided by designing the supporting spacers to provide a square cathode hole. Method of assembling the mount and bonding the elements is discussed.

B70-10700

LAMP MODULATOR PROVIDES SIGNAL MAGNITUDE INDICATION

ZEMAN, J. R. DATE- DEC. 1970
KSC-10565

Lamp modulator provides visible indication of presence and magnitude of an audio signal carrying voice or data. It can be made to reflect signal variations of up to 32 decibels. Lamp life is increased by use of a bypass resistor to prevent filament failure.

B70-10702

FERRITE ATTENUATOR MODULATION IMPROVES ANTENNA PERFORMANCE

HOOKS, J. C. /WESTERN ELEC. CO., INC./ LARSON, S. G. SHORKLEY, F. H. WILLIAMS, B. T. DATE- DEC. 1970
NPO-12011

Ferrite attenuator inserted into appropriate waveguide reduces the gain of the antenna element which is causing interference. Modulating the ferrite attenuator to change the antenna gain at the receive frequency permits ground tracking until the antenna is no longer needed.

B70-10721

HIGH TEMPERATURE CIRCUIT BREAKER

EDWARDS, R. N. /GE/ TRAVIS, E. F. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-1719
LEWIS-90265

Alternating current circuit breaker is suitable for reliable long-term service at 1000 deg F in the vacuum conditions of outer space. Construction materials are resistant to nuclear radiation and vacuum welding. Service test conditions and results are given.

B70-10722

MEASUREMENT OF SURFACE ROUGHNESS SLOPE

CASSIDY, J. F. DONNER, H. C. DATE- DEC. 1970
LEWIS-11080

Instrument, consisting of isolator, differentiator, absolute value circuit, and integrator, uses output signal from surface texture analyzer profile-amplifier to calculate surface roughness slope. Calculations provide accurate, instantaneous value of the slope. Instrument is inexpensive and applicable to any commercial surface texture analyzer.

B70-10724

MINIATURE MULTICONTACT CONNECTORS

HOLDEN, D. G. ROBELEN, D. B. DATE- DEC. 1970
LANGLEY-10740

Connectors, which have 4 to 9 contacts, are engaged through a hole with a minimum diameter of 0.030 inch. They are constructed of concentric brass and nylon components assembled with a light, firm press-fit. They withstand several thousand mating cycles and each outer contact has a one ampere capacity.

B71-10011

UNIVERSAL INTERFACE ENABLES ONE RECORDER TO SERVE NUMEROUS MEASURING INSTRUMENTS

DONLIN, N. E./BOXING CO./
JAN. 1971
M-FS-15134

Circuit handles data, regardless of polarity and amplitude, in 10-line decimal form or in any form of binary coded decimal. When measuring instruments have common chassis grounds, Zener diodes prevent low-leak circulating currents from unbalancing the circuit.

B71-10013

SATURABLE-REACTOR MOTOR STARTER REDUCES LINE VOLTAGE FLUCTUATIONS

CURRIE, N. G./N. AM. ROCKWELL CORP./
JAN. 1971
M-FS-18921

Saturable reactor starter uses back electromotive force /emf/ generated by large motors /18,650 to 596,800 watts/ to limit and control the starting current.

B71-10014

AUTOMATIC REFERENCE LEVEL CONTROL FOR AN ANTENNA PATTERN RECORDING SYSTEM

LIPIN, R., JR./SPERRY RAND CORP./
JAN. 1971
M-FS-20257

Automatic gain control system keeps recorder reference levels within 0.2 decibels during operation. System reduces recorder drift during antenna radiation distribution determinations over an eight hour period.

B71-10016

ELECTROMAGNETIC SIMULATION OF MICROWAVE BACKSCATTER FROM THE OCEAN SURFACE - A FEASIBILITY STUDY

WARD, R. B./LOCKHEED MISSILES AND SPACE CO./
JAN. 1971 SEE ALSO NASA-CR-98454
M-FS-20476

Photochemical etching is most successful method for obtaining simulated microwave backscatter pattern from ocean surface. Process is adaptable to integrated circuit and thin film semiconductor fabrications. The attained horizontal resolution of 10 should improve with equipment refinement.

B71-10021

STUDY OF SECOND BREAKDOWN IN POWER TRANSISTORS USING INFRARED TECHNIQUES

INNOVATOR NOT GIVEN /RAYTHEON CO./ JAN. 1971
M-FS-20748

Infrared thermal maps pinpoint exact location where second breakdown will occur before phenomenon happens and before physical damage develops at hot spot. Crystal structure analysis at that point determines cause of fault. Absolute power of radiation emitted from hot spot is direct indication of voltage level at which second breakdown occurs

B71-10025

RADIAL ROTATING ANTENNA-FEED SYSTEM

DODD, L. R. KELLER, G. C. MAXWELL, M. S.

FEB. 1971

GSFC-11013

System incorporating two or more radial feed assemblies tracks and communicates with multiple moving transmitters, receivers, or transponders. System utilizes a fixed parabolic reflector or other beam-forming device such as a lens or spherical reflector.

B71-10029

LONG-LIFE ELECTROMECHANICAL SINE-COSINE GENERATOR

FLAGGE, B.

MAR. 1971

LANGLEY-10503

Sine-cosine generator with no sliding parts is capable of withstanding a 20 Hz oscillation for more than 14 hours. Tests show that generator is electrically equal to potentiometer and that it has excellent dynamic characteristics. Generator shows promise of higher-speed applications than was previously possible.

B71-10032

CONDUCTIVE ELASTOMERIC EXTENSOMETER

GAUSE, F. L. GLENN, C. G.

FEB. 1971

M-FS-21049

Bridge circuit, in which conductive elastomeric material is the variable leg, precisely measures surface area changes in the human body. Circuits are used singularly, or in quantity by adding elements and amplifier circuits. Elastomeric strips can be located in a form-fitting garment.

B71-10033

WIDE-ANGLE, CIRCULARLY POLARIZED,

ONNIDIRECTIONAL-ARRAY ANTENNA

BOYER, R. B./RADIATION, INC./ CASE, E. W. ROSA, J.

FEB. 1971

GSFC-10928

Modified conventional turnstile antenna features bifoliate pattern with relatively high gain and good circularity over solid area enclosed by the 0.26 and 1.31 radian angles of elevation. These antennas are intended for high altitude balloon use, their permissible weight is restricted to one pound.

B71-10035

IMPROVED METHODS OF FORMING MONOLITHIC INTEGRATED

CIRCUITS HAVING COMPLEMENTARY BIPOLAR TRANSISTORS

BOHANNON, R. O., JR./TEX. INSTR. CORP./ CASHION, W. P.

STEHLIN, R. A.

FEB. 1971

LANGLEY-10358

Two new processes form complementary transistors in monolithic semiconductor circuits, require fewer steps /infusions/ than previous methods, and eliminate such problems as nonuniform h_{FE} distribution, low yield, and large device formation.

B71-10040

ACTIVE PARALLEL REDUNDANCY FOR ELECTRONIC

INTEGRATOR-TYPE CONTROL CIRCUITS

PETERSON, R. A./WESTINGHOUSE ASTRONUCL. LAB./

FEB. 1971

NUC-10231

Circuit extends concept of redundant feedback control from type-0 to type-1 control systems. Inactive channels are slaves to the active channel, if latter fails, it is rejected and slave channel is activated. High reliability and elimination of single-component catastrophic failure are important in closed-loop control systems.

B71-10043

INEXPENSIVE SYSTEM PROTECTS MEGAWATT

RESISTANCE-HEATING FURNACE AGAINST HIGH-VOLTAGE SURGES

STEARNS, E. J./WESTINGHOUSE ASTRONUCL. LAB./

MAR. 1971

NUC-10239

Coolant gas extinguishes arcing across the break in a heater element. Air-gap shunt which bypasses high voltage impressed across the circuit prevents damage if the resistance elements break and open the inductive circuit.

B71-10069

DUAL-CHANNEL CIRCUIT CONDITIONS/AMPLIFIES TRANSDUCERS'

INPUTS AND OUTPUTS

MURPHY, K. M./N. AM. ROCKWELL CORP./

APR. 1971

MSC-15712

Circuit includes two data channels and one shared precision power supply installed on a single 11.4 cm square circuit card. The unit is relatively inexpensive, compact, and suitable for most tests where low-noise and high-gain signal processing is required.

B71-10071

SUBMERSED SENSING ELECTRODE USED IN FUEL-CELL TYPE

HYDROGEN DETECTOR

NIEDRACH, L. W./GE/ RUDEK, F. P. RUTKONESKI, M. D.

APR. 1971

M-FS-14655

Electrode has silicone rubber diffusion barrier with fixed permeation constant for hydrogen. Barrier controls flow of hydrogen to anode and Faraday relationship establishes upper limit for current through cell. Electrode fabrication is described.

B71-10075

MICROWAVE DOSIMETER - A CONCEPT

BARTLETT, R./ALLIED RES. ASSOCIATES, INC./ BIRD, F.

APR. 1971

HQ-10407

Dosimeter determines time-integrated radiation dosage to which an individual is exposed. Integration is measured chemically in proportion to radiation detected. Wearer receives an exposure measurement representing an average of the dose over the entire body.

B71-10084

CERAMIC WIRING BOARD INCREASES PACKAGING DENSITY OF

ELECTRONIC MODULES

HANLEY, L. D./MIT/ MARTIN, J. H.

APR. 1971

MSC-13497

Ceramic multilayer wiring board interconnects large scale integration /LSI/ modules which dissipate nearly 2W/cc. Extremely high packaging density is possible by application of alumina cover hermetically sealed to board. Signal interconnections are completely dependent on transfer heat between layers.

B71-10088

HIGH DENSITY ELECTRONIC PACKAGING MODULE WITH IMPROVED

COOLING ASSEMBLY

MARTIN, J. H./MIT/

APR. 1971

MSC-13639

Cold plate increases heat transfer within high density electronic module. Tapered pins improve heat transfer process by providing larger surface pressure with increased planar area. Cooling technique increases thermal contact where planar area is limited, interface pressure increases the heat transfer coefficient.

B71-10089

WEIN BRIDGE OSCILLATOR CIRCUIT

LIPOMA, P. C./LOCKHEED ELECTRON. CO./

APR. 1971

MSC-13686

Circuit with minimum number of components provides stable outputs of 2 to 8 volts at frequencies of .001 to 100 kHz. Oscillator exhibits low power consumption, portability, simplicity, and drive capability, it has application as loudspeaker tester and audible alarm, as well as in laboratory and test generators.

01 ELECTRONICS/ELECTRICAL

B71-10102

IMPROVED HIGH-TEMPERATURE METAL-SHEATHED CABLES
FOX, H. A., JR./AEROJET-GEN. CORP./

MAY 1971

NUC-10413

Process prevents moist air degradation of cables insulated with magnesium oxide. Electrical-grade silicone oil is polymerized by heat application to produce water repellant surface coating. Insulation treated with this oil repels moisture.

B71-10114

SUBMINIATURE TRANSDUCER MEASURES UNSTEADY PRESSURES

RAMAN, K. R.

MAY 1971

ARC-10349

Transducer has thin piezoelectric sensing element of 0.051-cm-thick lead zirconate titanate crystal which is cut as a conical frustum. Sensing crystal and titanium wire are protected from mechanical shock and vibration. Transducer is insensitive to mechanical vibrations of instrument plug on which it is mounted.

B71-10121

LOW-COST QUASI-PARABOLIC ANTENNA
TAGGART, R. B., JR./STANFORD UNIV./

MAY 1971 SEE ALSO NASA-CR-72773

LEWIS-11291

Antenna design employs flat petal-shaped aluminum sheets and novel rim configuration. New antenna is inexpensive and has only slightly degraded performance. Design advantages are low-cost tooling and fabrication, convenient size and shape for transport and assembly, and simple assembly procedure.

B71-10125

SELF-REPLACEABLE THERMOCOUPLE FOR MOLTEN STEEL BATH - A CONCEPT

BLAU, P./WESTINGHOUSE ASTRONUCL. LAB./ ZELLNER, G.

MAY 1971 SEE ALSO B66-10461

NUC-10223

Thermocouple wires, consisting of tungsten-rhenium alloy protected by ablative ceramic coating, are wound on a reel and fed continuously into bath. Tests indicate accuracy and reliability are comparable to conventional devices.

B71-10128

HIGH CURRENT COMPENSATION NETWORK FOR DC LOGARITHMIC AMPLIFIERS

WILSON, J. H./WESTINGHOUSE ASTRONUCL. LAB./

MAY 1971

NUC-10148

Circuit voltage output is reduced by voltage equivalent to ampere resistance drop of nonlogarithmic resistances of practical diodes; therefore, output is same as circuit using ideal diode. Circuit applies to meter and electronic recorder movements, and improves performance of radiation detectors and several microbiological monitoring devices

B71-10132

HYBRID REDUNDANCY SYSTEM FOR IMPROVING RELIABILITY - A CONCEPT

MATHUR, F. P.

MAY 1971 SEE ALSO JPL-TR-32-1467

NPO-11546

System combines two concepts - triple modular redundancy (TMR) and spares (replacement system) redundancy. System has triplicated active unit core with associated bank of specifically arranged standby spare units. Curves plotted from characteristic equation show hybrid system is more reliable than conventional TMR systems.

B71-10136

HIGH VOLTAGE LIGHTNING GROUNDING DEVICE

HOFFMAN, R. G. PETERSON, V. S.

MAY 1971

LEWIS-11282

Grounding device insertion in wire termination cabinets and terminal block modification prevent lightning-induced high voltage transients from reaching inputs or outputs of solid state instruments and control systems. Installation minimizes wiring confusion and achieves 100 percent protection.

B71-10142

SATURATION CURRENT SPIKES ELIMINATED IN SATURABLE CORE TRANSFORMERS

SCHWARZ, F. C.

MAY 1971

ERC-10125

Unsaturation composite magnetic core transformer, consisting of two separate parallel cores designed so impending core saturation causes signal generation, terminates high current spike in converter primary circuit. Simplified waveform, demonstrates transformer effectiveness in eliminating current spikes.

B71-10162

DESIGN OF HYSTERESIS CIRCUITS USING DIFFERENTIAL AMPLIFIERS

COOKE, W. A./LOCKHEED MISSILES AND SPACE CO./

JUN. 1971

ARC-10070

Design equations for hysteresis circuit are based on the following assumptions: amplifier input impedance is larger than source impedance; amplifier output impedance is less than load impedance; and amplifier switches state when differential input voltage is approximately zero. Circuits are designed to any given specifications.

B71-10170

ELECTRONIC RIPPLE INDICATOR

DAVIDSON, J. K. HOUCK, W. H.

JUN. 1971

KSC-10162

Electronic circuit for monitoring excessive ripple voltage on dc power lines senses voltage variations from few millivolts to maximum of 10 volts rms. Instrument is used wherever power supply fluctuations might endanger system operations or damage equipment. Device is inexpensive and easily packaged in small chassis.

B71-10171

VOLTAGE-CONTROLLED OSCILLATOR

DURAND, J. L./SYSTEMS TECHNOL., INC./

JUN. 1971

ARC-10078

Oscillator generates symmetrical triangular waveform when inverting and noninverting inputs are equal. Oscillator portion of circuit has integrated circuit, high-performance operational amplifier wired as differential integrator, and two silicon controlled rectifiers.

B71-10174

A 20 KHZ POWER OSCILLATOR

STURMAN, J. C.

JUN. 1971

LEWIS-11319

Circuit providing stable sine wave power up to 10 W supplies small amounts of power at frequency other than 60 Hz. Circuit has Wien bridge oscillator which uses operational amplifier to feed power amplifier stage. Power amplifier stage uses booster amplifier and two discrete transistors for power output.

B71-10177

MULTILOOP DISTRIBUTED RC ACTIVE NETWORKS

KERWIN, W. J.

JUN. 1971

ARC-10200

Distributed RC active two-port network and voltage amplifier provides advantage over lumped elements in that second-order bandpass function is obtained with single distributed passive element. Incorporating positive and negative feedback loops provides improvement in Q, sensitivity, and gain-Q sensitivity product compared to single-loop networks.

B71-10179

IMPROVED SHEATH REMOVAL TECHNIQUE FOR VERY SMALL THERMOCOUPLES

MUELLER, R.

JUN. 1971

LEWIS-11228

Standard "weldmatic" spotwelder and tweezer-type welding head burns and vaporizes sheath material to expose undamaged thermocouple wire. Firing is

repeated to remove additional sheathing and after three or four firings electrodes require cleaning.

B71-10182
DETERMINATION OF NONLINEAR RESISTANCE VOLTAGE-CURRENT RELATIONSHIPS BY MEASURING HARMONICS
STAFFORD, J. M./IBM CORP./
JUN. 1971
M-FS-20402

Test configuration measures harmonic signal amplitudes generated in nonlinear resistance. Vacuum-type voltmeter measures low frequency sinusoidal input signal amplitude and wave-analyzer measures amplitude of harmonic signals generated in junction. Input signal harmonics amplitude must not exceed that of harmonics generated in nonlinear resistance.

B71-10190
INEXPENSIVE, LARGE-DIAMETER, RADAR TRACKING AND CALIBRATION SPHERES
HOLDREN, R. H.
JUN. 1971
XLA-11154

Plastic models of polystyrene beads are produced to within 0.02 cm accuracy, in various diameters designed to meet exact requirements of particular radar system frequency spectrum. They are inexpensive and do not require special handling imposed on metal spheres.

B71-10193
SMALL SIZE TRANSFORMER PROVIDES HIGH POWER REGULATION WITH LOW RIPPLE AND MAXIMUM CONTROL
MANOLI, R./N. AM. ROCKWELL CORP./ ULRICH, B. R.
JUN. 1971
M-FS-16709

Single, variable, transformer/choke device does work of several. Technique reduces drawer assembly physical size and design and manufacturing cost. Device provides power, voltage current and impedance regulation while maintaining maximum control of linearity and ensuring extremely low ripple. Nulling is controlled to very fine degree.

B71-10201
AN IMPROVED TELEMETRY SYSTEM
LUMB, D. R.
JUN. 1971 SEE ALSO NASA-TN-D-4105, NASA-TN-D-4402
ARC-10336

Transmission of parity bits together with data bits by a rate one half convolutional code of 25-bit constraint length, with sequential decoding of received signal increases quantity and accuracy of data transmitted by pulse code modulated system operating at given power level.

B71-10204
COARSE ROLL-RATE GAIN-CONTROL CIRCUIT
COOKE, W. A./LOCKHEED MISSILES AND SPACE CO./
JUN. 1971
ARC-10064

Circuit is used in spin-rate computing unit of control system for solar pointing rocket during its acquisition mode. Direction cosines from magnetometers and coarse sun sensors derive function that is approximately roll-rate times sum of absolute value of direction cosines.

B71-10221
AUTOMATIC CROSS-SECTIONING AND MONITORING SYSTEM LOCATES DEFECTS IN ELECTRONIC DEVICES
JACOBS, G./SPERRY RAND/ SLAUGHTER, B.
JUL. 1971
GSFC-11221

System consists of motorized grinding and lapping apparatus, sample holder, and electronic control circuit. Low power microscope examines device to pinpoint location of circuit defect, and monitor displays output signal when defect is located exactly.

B71-10231
ELECTROLYSIS CELL FUNCTIONS AS WATER VAPOR DEHUMIDIFIER AND OXYGEN GENERATOR
CLIFFORD, J. E./BATTELLE MEM. INST./
JUL. 1971 SEE ALSO NASA-CR-771, NASA-CR-73170
ARC-10316

Water vapor is absorbed in hygroscopic electrolyte, and oxygen generated by absorbed water electrolysis at anode is added simultaneously to air stream. Cell applications include on-board aircraft oxygen systems, portable oxygen generators, oxygen concentration requirements, and commercial air conditioning and dehumidifying systems.

B71-10234
CATHETER TRANSDUCER AND CIRCUIT
HARRISON, D. R. KERWIN, W. J.
JUL. 1971 SEE ALSO B67-10669
ARC-10132

Simple integrated circuit located at transducer, enables use of single coaxial cable for both input and output connections. Circuit is sensitive to changes in RC time constant, has much improved sensitivity characteristics, and is unaffected by changes in cable capacitance effects.

B71-10242
FLAT-CONDUCTOR CABLE HAS ROTARY AND LINEAR FLEXIBILITY
CARDEN, J. R.
JUL. 1971 SEE ALSO NASA-TM-X-53960
M-FS-21096

Report describes capabilities and limitations of flat-conductor cable /FCC/ relative to flexure in bending, folding, rotating, and extending, it also compares FCC mechanical and endurance characteristics with round-wire cable, and compares qualities of various types of insulation for FCC. Several configurations exemplify FCC flexibility.

B71-10274
FAST CARRY ACCUMULATOR DESIGN
MASTIN, W. C./ASTRIONICS LAB./
AUG. 1971 SEE ALSO NASA-TM-X-53983
M-FS-20902

Simple iterative accumulator combined with gated-carry, carry-completion detection, and skip-carry circuits produces three accumulators with decreased carry propagation times. Devices are used in machine control, measurement equipment, and computer applications to increase speed of binary addition. NAND gates are used in combining network.

B71-10275
OSCILLATING TANK CIRCUIT ELIMINATES BALLAST RESISTOR IN LAMP CONTROL CIRCUIT
LISTER, L. R./SPERRY RAND/
AUG. 1971
M-FS-20891

Circuit limits lamp current, replacing the series current-limiting resistor.

B71-10279
ISOSCELES DETECTOR PROVIDES MAXIMUM RESOLUTION IN EXPANDED RANGE
WATTERSON, R. F./SANDERS ASSOCIATES, INC./
AUG. 1971
GSFC-10932

Dynamic range expansion system for radio frequency /RF/ signal detection equipment consists of RF amplifiers, RF amplitude modulated detectors, and operational amplifier. The analog output gives maximum resolution over fixed voltage range, without switching. Two minor drawbacks of this circuit are cited.

B71-10286
OSCILLATOR WITH WIDE DYNAMIC TUNING RANGE
RIPPY, R. R.
AUG. 1971
GSFC-11086

Two or more tandem amplifier stages, one of which is tuned, added to a circuit permit tuning an oscillator over frequency range of six decades. Oscillator operates in distributed mode for increased frequency stability. Within practical limitations, stability increases by increasing number of tuned stages.

B71-10287
ENHANCING EFFICIENCY OF SINGLE, LARGE-APERTURE ANTENNAS
COHEN, H./ADVANCED TECHNOL. CORP./ GRIMES, D. E.
LITTLEPAGE, R. S.

01 ELECTRONICS/ELECTRICAL

AUG. 1971 SEE ALSO NASA-CR-101352
HQ-10597

Numerical analysis method provides means of describing energy distribution in focal plane of parabolic surface in terms of phase and wavelength. Two approaches for enhancing antenna efficiency include single, large reflector focused to feeding element, and array of smaller apertures whose individual outputs are summed.

B71-10292
IMPROVED RELAY CHATTER DETECTOR
REYNOLDS, R. K.
AUG. 1971
NPO-10355

Detector provides go/no-go sensing of momentary relay or contact opening during vibration testing. Device compares duration of unwanted openings to calibrated standard and lights indicator if standard is exceeded. Stability and reliability are higher than in any other comparable device.

B71-10304
A CONTINUED FRACTION GENERATOR FOR SMOOTH PULSE SEQUENCES
COHN, M./SPERRY RAND/ EVEN, S. LINCOLN, S. J.
AUG. 1971
MSC-13697

Digital circuit produces rational output pulse rate at fraction of continuous input pulse rate. Output pulses have average rate with least possible deviation from absolute correct time spacing. Circuit uses include frequency synthesizing, fraction generation, and approximation of irrational sequences.

B71-10309
CALIBRATION-INTERNAL ADJUSTMENT INDICATOR - A CONCEPT
HEDENE, P. S./N. AM. ROCKWELL CORP./
AUG. 1971
M-PS-18693

Circuit, when used with decision table, permits relatively unskilled personnel to maintain effective quality control. Design determines required changes in calibration intervals. Interval readings are recorded to nearest integer, making high precision unnecessary. Specific required performance-history information is discussed.

B71-10313
MICROWAVE BIASING IMPROVES DETECTOR RESPONSE IN THE INFRARED REGION
SUN, C./RCA/ WALSH, T. E.
AUG. 1971
GSFC-11050

Detection system, which incorporates advantages of microwave biasing, measures output of a carbon dioxide laser at 10.6 microns with a factor of 1,000 improvement in sensitivity. Material lifetime, rather than external circuitry, limits detector response time.

B71-10322
NOVEL SHIFT REGISTER ELIMINATES LOGIC GATES AND POWER SWITCHING CIRCUITS
CLIFF, R. A.
AUG. 1971
GSFC-10517

Register requiring two integrated circuits per stage has nominal power dissipation of 3.5 mW per stage, its use eliminates reset pulse, allowing data transfer to occur in less than 1 microsecond, and eliminates power application to both right and left portions of the register simultaneously.

B71-10323
PRESSURE TRANSDUCER WITH FOUR-DECADE DYNAMIC RANGE
INNOVATOR NOT GIVEN /BOEING CO./ AUG. 1971
KSC-10384

Adjustable resistor taps in gain-control feedback loop of the transducer permit wide sensing range, shorting the pins on electrical connector allows selection of appropriate range. Electrical specifications of the transducer and its applications are cited.

B71-10334
ION IMPLANTATION REDUCES RADIATION SENSITIVITY OF METAL OXIDE SILICON /MOS/ DEVICES
INNOVATOR NOT GIVEN /RES. TRIANGLE INST./ SEP. 1971
SEE ALSO NASA-CR-1584
LANGLEY-10630

Implanting nitrogen ions improves hardening of silicon oxides 30 percent to 60 percent against ionizing radiation effects. Process reduces sensitivity, but retains stability normally shown by interfaces between silicon and thermally grown oxides.

B71-10341
PICTORIAL DISPLAY OF MATERIALS AND PROCESSES AIDS IN FABRICATING COMPLEX ASSEMBLIES
EHRET, R. M./N. AM. ROCKWELL CORP./ FAWKES, G. J.
SEP. 1971
M-PS-24006

Method uses assembly consisting of single pictorial display showing cutaway view of assembly, subassemblies identified by name and materials, and processes identified by both specification and commercial design. Display is used in engineering, manufacturing, and personnel training.

B71-10345
DIGITAL DECODER FOR PHASE-DELAY CODED DATA
LEWIN, J./RCA/
SEP. 1971
GSFC-10894

Coded or modulated digital data converts to nonreturn to zero /NRZ/ data. Technique includes logic implementation and pertinent timing diagrams. Demodulation to NRZ facilitates digital logic operations on incoming data. Phase-delay modulation has advantage of inherent self-timing not present in NRZ modulation.

B71-10346
NONVOLATILE READ/WRITE MEMORY ELEMENT - A CONCEPT
CRICCHI, J. R./WESTINGHOUSE ELEC. CORP./ LITTLE, W. J.
SEP. 1971 SEE ALSO NASA-CR-106493
GSFC-10993

Memory, with limited number of programming cycles, is achieved by using verticle, fusible links in series with oxide breakthrough elements. Memory elements are fabricated with integrated circuit technology and are ideal for low power digital computer application.

B71-10347
DIODE MATRIX REDUCES COMPUTER MEMORY POWER REQUIREMENTS
CRICCHI, J. R./WESTINGHOUSE ELEC. CORP./
SEP. 1971 SEE ALSO NASA-CR-106493
GSFC-10994

Bidirectional MOS driver, integrated with diode matrix reduces fuse read current to only that of junction leakage and transient MOS gate charging current. No current, except junction leakage current, flows in unaddressed cells. Current required to drive MOS gate flows through unfused branch only during read mode.

B71-10349
DOUBLE PHASE-LOCK LOOP WITH RAPID TRANSIENT RESPONSE
A CONCEPT
BALCEWICZ, J. F./RCA/
SEP. 1971
GSFC-10864

Integration loop, with narrow bandwidth and long response time, integrates phase estimate of sampling loop, resulting in slower but less jittery response to phase step changes. Sampling loop has wide bandwidth and quick response to phase steps of burst sync interval.

B71-10361
SYSTEMS MANAGEMENT TECHNIQUES AND PROBLEMS
INNOVATOR NOT GIVEN /NASA. MARSHALL SPACE FLIGHT CENTER/ SEP. 1971
M-PS-21401

Report is reviewed which discusses history and trends of systems management, its basic principles, and nature of problems that lend themselves to systems approach. Report discusses systems engineering as applied to weapons

acquisition, ecology, patient monitoring, and retail merchandise operations.

B71-10365
DISCRETE-COMPONENT S-BAND POWER AMPLIFIER
LINE, L. G. RIPPY, R. R.
SEP. 1971
GSFC-11248

Amplifier uses low Q input and output circuitry incorporating four variable air dielectric capacitors. Performance over conventional designs includes - increased power output, decreased likelihood of parametric oscillation, and increased thermal stability.

B71-10368
SILICON CONTACT FOR AREA REDUCTION OF INTEGRATED CIRCUITS
LIN, H. C.
SEP. 1971
M-FS-20688

Semiconductor contact is used in place of metal contact forming a low leakage junction with the background material even if misalignment occurs.

B71-10379
FLAT CONDUCTOR CABLE HANDBOOK
ANGELE, W. HANKINS, J. D.
OCT. 1971 SEE ALSO NASA-SP-5043, NASA-SP-5924/01/
NASA-TM-X-53975
M-FS-21009

Handbook includes discussion of FCC advantages, status of FCC regarding military specifications, hardware availability, and existing applications, descriptions and data on available cable, connectors, fasteners and hardware, design techniques and applications, wiring, manufacturing and installation techniques - and inspection and test procedures.

B71-10380
PROGRAM AUDIT A MANAGEMENT TOOL
MILLER, T. J./BOEING CO./
OCT. 1971
KSC-10557

Program gives in-depth view of organizational performance at all levels of the management structure, and provides means by which managers can effectively and efficiently evaluate adequacy of management direction, policies, and procedures.

B71-10426
RF-CONTROLLED IMPLANTABLE SOLID STATE SWITCH
FRYER, T. B.
NOV. 1971
ARC-10136

Miniature, totally implantable, solid state RF-controlled switching circuit for biotelemetry systems consumes zero power in off condition and turns on or off by pulse of RF energy. Switch, the size of small coin, is reducible by integrated circuit techniques.

B71-10428
CLOCKING CONNECTOR REPLACES ADAPTER CABLES
ARRIOLA, S./N. AM. ROCKWELL CORP./ RASNUSSEN, R. A.
NOV. 1971
M-FS-14778

Single cable using simplified, versatile clocking connector satisfies clocking variations that previously required many cables. Connector consists of specially fabricated grommet follower dial housing, dial assembly, and modified insert.

B71-10429
WAVESHAPING ELECTRONIC CIRCUIT
HARPER, T. P./IBM/
NOV. 1971
M-FS-14916

Circuit provides output signal with sinusoidal function in response to bipolar transition of input signal. Instantaneous transition shapes into linear rate of change and linear rate of change shapes into sinusoidal rate of change. Circuit contains only active components; therefore, compatibility with integrated circuit techniques is assured.

B71-10438
RADIOGRAPHIC INSPECTION SPECIFICATIONS FOR ELECTRONIC COMPONENTS
INNOVATOR NOT GIVEN /TRW, INC./ NOV. 1971
M-FS-20723

Quality assurance provisions cover personnel

training, radiographic equipment, radiographic test procedures, and inspection and examination of radiographs. Supplementary information includes accept and reject criteria for radiographic inspection of resistors, capacitors, transistors, hybrid microcircuits, diodes, small coils and transformers.

B71-10450
DIGITAL PARALLEL-TO-SERIES PULSE-TRAIN CONVERTER
HUSSEY, J./GRUMMAN AEROSPACE CORP./
NOV. 1971
NSC-12417

Circuit converts number represented as two level signal on n-bit lines to series of pulses on one of two lines, depending on sign of number. Converter accepts parallel binary input data and produces number of output pulses equal to number represented by input data.

B71-10452
PRECISION, TRIPLE-PARAMETER, NONDESTRUCTIVE-TEST SYSTEM FOR IN-PROCESS MICROWELDING
INNOVATOR NOT GIVEN /WALTER V. STERLING, INC./ NOV. 1971 SEE ALSO NASA-CR-73207, NASA-CR-73385
ARC-10402

System simultaneously and automatically monitors weld pulse voltage, dynamic setdown, and infrared radiation of weld as it is formed. Features of system include minimum complexity, measurement reliability, simple signaling, and no impediment to operator manipulations.

B71-10469
LOW-FREQUENCY TRIANGULAR WAVE GENERATOR
THOMPSON, J. P./LOCKHEED MISSILES AND SPACE CO./
DEC. 1971
ARC-10259

Triangular waveform is generated by a combination of two integrated circuit operational amplifiers, one to produce square wave and other to integrate square wave and generate triangular wave.

B71-10471
CONTACT-RESISTANCE TEST PROBES- A' CONCEPT
MAXWELL, J. H. MC DERMOTT, R. J.
BROOKS, C. H./N. AM. ROCKWELL CORP./
DEC. 1971
M-FS-16891

Devices are used in inspection of contact resistance in plated connectors after assembly into cables. System permits rapid inspection of connectors when mating connectors or special apparatus are not available, and enables source of excessive resistance to be precisely determined.

B71-10486
INSTRUMENT ACCURATELY MEASURES STRESS LOADS IN THREADED BOLTS
ROLLINS, F. R., JR./MIDWEST RES. INST./
DEC. 1971 SEE ALSO NASA-CR-10292
M-FS-21121

Interferometric instrument response is linearly related to axial tensile stresses, and, under idealized conditions, measurement errors are within approximately plus or minus 1 percent. Ultimate accuracy of instrument depends on a number of variables, such as bolt material, dimensions, and geometry and uniformity of stresses and temperature.

B71-10497
PULSE WIDTH-PULSE RATE MODULATOR
COOKE, W. A./LOCKHEED MISSILES AND SPACE CO./
DEC. 1971
ARC-10025

Attitude control system designed for rockets regulates duty cycle of pneumatic valves so less fuel is required. Operation time of each valve is directly proportional to error signal and the dead band about a null is controlled by independently adjustable threshold circuits.

B71-10498
WIDE-RANGE LOGARITHMIC RADIONETER FOR MEASURING HIGH TEMPERATURES
LISTON, E. M./STANFORD RES. INST./
DEC. 1971
ARC-10254

Filter radiometer utilizing photomultiplier circuit, in which a direct-coupled amplifier varies dynode voltage to maintain constant anode current, measures rapid variations of temperature of white-hot charred body at 2000 K to 3000 K.

01 ELECTRONICS/ELECTRICAL

B72-10007

PEAK ACCELERATION LIMITER

C. P. Chapman

Dec. 1972

NPO-10556

Device is described that limits accelerations by shutting off shaker table power very rapidly in acceleration tests. Absolute value of accelerometer signal is used to trigger electronic switch which terminates test and sounds alarm.

B72-10014

PIEZOELECTRIC TRANSDUCER MOSAIC

R. C. Haborak (TRW Systems Group)

1972

ARC-10509

Crystal substrate is used to form a transducer mosaic by employing single X-cut crystal and transferring desired pattern from stainless steel mask. Result is a less tedious and costly method of producing a mosaic of matched crystals having the same fundamental frequency.

B72-10021

BERYLLIUM THIN FILMS FOR RESISTOR APPLICATIONS

O. Fiet (TRW Systems Group)

1972

ARC-10485

Beryllium thin films have a protective oxidation resistant property at high temperature and high recrystallization temperature. However, the experimental film has very low temperature coefficient of resistance.

B72-10042

PSEUDO-SATURATING POWER CONVERTER

R. G. Radys (Hughes Aircraft Co.) and C. V. Agnew (Hughes Aircraft Co.)

1972

NPO-11368

Relative performance of three basic configurations of electronic conversion units (saturating, pseudo-saturating, nonsaturating) requiring low power levels is compared. Pseudo-saturating mode exhibits best overall performance, nonsaturating a close second, saturating a poor third.

B72-10043

DEEP SPACE NETWORK

F. M. Flanagan, P. S. Goodwin, and N. A. Renzetti

1972 See also NASA-CR-12898

NPO-11562

Background, current status, and sites of Deep Space Network stations are briefly discussed.

B72-10045

ELECTRICAL GROUNDING BRACKET

C. E. Carroll (TRW Systems Group)

1972

ARC-10041

Device serves as common grounding point for shielded wires of multipin electrical connector and permits addition or removal of ground leads without disturbing other grounded wires.

B72-10047

HIGH NOISE IMMUNITY ONE SHOT

G. L. Schaffer

1972

ARC-10137

Multivibrator circuit, which includes constant current source, isolates line noise from timing circuitry and field effect transistor controls circuit's operational modes. Circuit has high immunity to supply line noise.

B72-10054

PULSE EXCITATION OF BOLOMETER BRIDGES

S. J. Rusk (Lockheed Missiles and Space Co.)

1972

ARC-10292

Driving bolometer bridge by appropriately phased excitation pulses increases signal-to-noise ratio of bolometer sensor which

operates on a chopped light beam. Method allows higher applied voltage than is possible by conventional ac or dc excitation.

B72-10055

TOPOLOGICAL SOLUTION OF BILATERAL SWITCHING NETWORKS

L. Mazer

1972

ARC-10294

Topological method uses the eye as pattern detector to trace path of transmission on truth table. Pathway selection is continually supervised by logician, allowing him to seek planar iterative solution desirable for fabrication of monolithic circuits. Method applies to parity generators, multiple output functions, full adders, and bit comparators.

B72-10056

COAXIAL INVERTED GEOMETRY EPITAXIAL TRANSISTOR

R. J. Hruby, W. R. Dunn (Lockheed Missiles and Space Co.), and S. B. Cress (Lockheed Missiles and Space Co.)

1972

ARC-10330

Silicon transistor, developed for use in biotelemetry circuits, provides high current gain at low levels of power and voltage. Device operates from biopotential or miniature batteries and is suitable for incorporation into monolithic integrated circuits. Coaxial configuration and small size offer promise for high frequency application.

B72-10057

CIRCUIT PERMITS INDEPENDENT ADJUSTMENT OF GAIN AND OFFSET AT CONSTANT INPUT IMPEDANCE

V. B. Holland

1972

ARC-10348

Circuit with single operational amplifier conditions input signals for data acquisition systems by applying offset voltage correction signal to feedback circuit instead of one of the input terminals of operational amplifier.

B72-10059

IMPROVED AUDIO REPRODUCTION SYSTEM

C. S. Chang (Lockheed Missiles and Space Co.)

1972 See also NASA-CR-114287

ARC-10404

Circuitry utilizing electrical feedback of instantaneous speaker coil velocity compensates for loudspeaker resonance, transient peaks and frequency drop-off so that sounds of widely varying frequencies and amplitudes can be reproduced accurately from high fidelity recordings of any variety.

B72-10060

LIGHTWEIGHT, BROAD-BAND SPECTRUM ANALYZER

G. M. Crook (TRW Systems Group)

1972

ARC-10405

Spectrum analyzer, utilizing techniques similar to those used to classify energy levels of nuclear particles, is incorporated into electric field detector. Primary advantage is ability to perform qualitative broad-band frequency analysis over a large dynamic amplitude range with minimum weight and electrical power requirements.

B72-10077

VOLTAGE-TUNABLE PARALLEL-T FILTER FOR REMOTE OPERATION

R. E. Brantner

1972

NPO-11165

Filter is devised by using insulated-gate field-effect transistors for remote control. Transistors are P-channel devices that operate in enhancement mode and are commercially available.

B72-10079

CIRCUIT CONTROLS TURN-ON CURRENT

K. G. Holmes

1972

NPO-11339

Single choke used in primary circuit with diode arrangement, maintaining dc current flow through choke and setting up a unidirectional magnetic field, limits turn-on current of transformer-rectifier power supply. Technique reduces number and weight of components and minimizes effect of initial inrush surge current on source.

B72-10080**WIDE ANGLE SOLAR SENSOR**

L. F. Schmidt and W. E. Crawford

1972

NPO-11341

Method for correcting orientation of spacecraft with respect to sun is discussed. System consists of two photocells on either side of sensor. When photocells are evenly illuminated, no output is made from sensor. When photocells are unevenly illuminated, sensor sends signal to gas jets to change orientation.

B72-10092**PRECISION VOLTAGE REGULATOR**

P. J. Hand and R. A. Crawford

1972

NPO-11502

Balanced positive and negative voltage output circuit, in which error voltage for control is developed from difference in absolute value of positive and negative voltages referenced to a common point, regulates voltage for use with inertial reference unit. Fast-acting, temperature-compensated, high-gain operational amplifier circuits maintain common point.

B72-10096**PIEZOELECTRIC ACTUATOR USES SEQUENTIALLY-EXCITED MULTIPLE ELEMENTS: A CONCEPT**

E. E. Sabelman

1972

NPO-11527

Utilizing arrays of sequentially-excited piezoelectric elements to provide motion in a nonmagnetic motor provide built-in redundancy and long life required for deployment or actuation of devices on spacecraft. Linear-motion motor devices can also be fabricated.

B72-10100**STABLE PHOTODIODE AMPLIFIERS**

H. Fujimoto

1972

NPO-11561

Minimization of common mode effects in differential amplifier arrangement which processes signals from two high impedance photodiodes is achieved by connecting one photodiode in feedback loop of amplifier and using field effect transistors in the input circuit.

B72-10102**SIGNAL TO NOISE MEASUREMENT CIRCUIT**

L. F. Deerkoski

May 1972

GSFC-11239

Phase lock reference provides a rapid and accurate method of determining the signal-to-noise ratio at the intermediate frequency stage of a receiver.

B72-10103**LONGITUDINAL FRICTION FORCES IN PIPING DESIGN**

C. S. Parker (GE)

May 1972

M-FS-13754

Scheme measures sliding support friction forces and incorporates them into software programs which are used to analyze piping flexibility.

B72-10106**TORNADO DETECTOR AND ALARM**

A. R. Moss

May 1972

M-FS-20915

Automatic device which attaches to an active television set sounds an audible alarm when a tornado is within 29 km (18 miles) of device.

B72-10112**FLEXIBLE DESK TOP COMPUTERS USING LARGE SCALE INTEGRATION (L.S.I.) CHIPS**

H. Garrett and R. C. Asquith

1972

M-FS-21277

Microprogrammable modular computer utilizing only seven different types of L.S.I. elements lowers manufacturing cost and improves reliability. Chips can be standardized and used to implement variable bit length computers.

B72-10116**TIME-ADJUSTED VARIABLE RESISTOR**

R. C. Heyser

Dec. 1972

NPO-11306

Timing mechanism was developed effecting extremely precisioned highly resistant fixed resistor. Switches shunt all or portion of resistor; effective resistance is varied over time interval by adjusting switch closure rate.

B72-10124**FREQUENCY SWITCH KEYED OSCILLATOR**

L. Katchis (Randonics, Inc.)

1972

ARC-10412

Oscillator changes resonant frequency of the LC tank circuit by shunting one of a pair of parallel capacitors. Technique reduces amount of hardware required to interrogate and control remote systems.

B72-10134**HIGH-TEMPERATURE, LONG-LIFE THYRATRON**

E. A. Baum (GE) and N. D. Jones (GE)

May 1972 See also B69-10376; NASA-CR-1684

LEWIS-11327

Thallium and xenon filled thyratron was developed that operates at tube envelope temperatures up to 750 C. This tube performs at peak voltage ratings of 2000 V forward and reverse and at an average current rating of 15 A for up to 11,000 hours.

B72-10138**COMPENSATION OF VOLTAGE DROPS IN SOLID-STATE SWITCHES USED WITH THERMOELECTRIC GENERATORS**

K. Shimada

Dec. 1972

NPO-11388

Seebeck effect solid state switch was developed eliminating thermoelectric generator switch voltage drops. Semiconductor switches were fabricated from materials with large Seebeck coefficients, arranged such that Seebeck potential is generated with such polarity that current flow is aided.

B72-10145**A RELIABLE LIQUID HELIUM DETECTOR**

W. M. Krawczonek and B. Stephenson

May 1972

LEWIS-11487

Detector and indicator system, utilizing commercial perforated germanium cryogenic thermometer as level sensor containing adjustable level discriminator with indicators, operates reliably over pressure range from 50 to 900 mm Hg without electronic adjustments.

B72-10149**GATE PROTECTIVE DEVICE FOR INSULATED GATE FIELD-EFFECT TRANSISTORS**

R. A. Sunshine (RCA)

May 1972

M-FS-21626

01 ELECTRONICS/ELECTRICAL

Device, which protects insulated gate field-effect transistors, improves reliability through utilization of layers of conductive material on top of each alternating semiconductor material region. Separation of layers is necessary to prevent shorting out junctions between alternating regions.

B72-10155
CRYSTAL-CONTROLLED MULTIVIBRATOR
R. C. Schober
Dec. 1972
NPO-11627

Method is described for designing crystal oscillator which has frequency and symmetry stability suitable for system-clock-generators used in spacecraft data systems. Simple multivibrator is used in which timing capacitor is replaced by a crystal.

B72-10156
SELECTING DIGITAL FILTERS
R. E. DeMandel (Lockheed Missiles and Space Co.) and S. J. Krivo (Lockheed Missiles and Space Co.)
May 1972
M-FS-20933

Technique reduces task of filter design by using cut off frequency, termination frequency and weight number to determine filter effect on frequency domain of digital filter input data function.

B72-10159
ZIPPER-TYPE ELECTRICAL CONNECTORS
C. E. Levoe
Dec. 1972
NPO-11639

Electrical connector is described of zipper-like configuration, in which sequentially interlocking tines serve as electrical contacts or insulators.

B72-10165
DIFFERENTIAL INPUT PREAMPLIFIER
P. W. Callaway (Santa Barbara Res. Center)
1972
ARC-10489

Preamplifier chops and amplifies very low level output of thermopile infrared detectors that will be used to measure thermal energy flux of Jupiter and its departure from a blackbody spectrum. Output signal has negligible phase shift. AC signal is RC-coupled to input stage of other amplifiers.

B72-10176
LONG-TERM DRIFT OF THERMOCOUPLES AT 1600 K
G. E. Glawe
May 1972 See also NASA-TN-D-7027
LEWIS-11471

Thermal electromotive-force changes for 30 commercially available noble- and refractory-metal thermocouples have been determined in air, argon, and vacuum, at 1600 K for exposures up to 10,000 hours. Investigation techniques can serve as guidelines for future studies of other thermocouple systems.

B72-10181
IMPROVED HIGH VOLTAGE INSULATOR FOR USE IN VACUUM
D. C. Byers, P. M. Margosian, and G. E. Mealy
Dec. 1972
LEWIS-11401

High voltage insulator for electron bombardment ion thruster has electric field directed through dielectric material and electrons emitted by field emission are constrained in negative junction region. Surface flashover and unstable operation are eliminated, and maximum voltage is limited only by dielectric strength of material, aluminum oxide in this case.

B72-10184
SPEED ENHANCEMENT OF COMPLEMENTARY MOS DEVICES
M. Devlin (GE)
1972

ARC-10387

Speed required for Sisyphus experiment on Pioneer probe was attained at supply voltage well within component limitations by combining supply voltage higher than nominal with low reactance interconnections. Speed was found to be far in excess of typical parameters suggested by manufacturers of MOS devices.

B72-10185
LOW PHASE-SHIFT AMPLIFIER
G. F. Lutes and R. C. Coffin
Dec. 1972
NPO-11663

Single-stage MOSFET amplifier is described which is identical to standard neutralized amplifier except that neutralization provided by broadband transformer is applied to AGC gate instead of signal gate. Neutralization of drain-to-control gate capacity minimizes the phase change induced by variation in AGC.

B72-10186
PERFORMANCE OF SILICON SOLAR CELL ASSEMBLIES
R. G. Ross, Jr., R. K. Yasui, W. Jaworski, L.-C. Wen, and E. L. Cleland
Dec. 1972
NPO-11847

Solar cell assembly current-voltage characteristics, thermal-optical properties, and power performance were determined. Solar cell cover glass thermal radiation, optical properties, confidence limits, and temperature intensity effects on maximum power were discussed.

B72-10218
TEMPERATURE COMPENSATION OF LIGHT-EMITTING DIODES
G. J. Deboo and C. N. Burrous
1972
ARC-10467

Circuit which includes a thermistor-resistor combination to compensate for temperature fluctuations by supplying input voltage to light-emitting diode, maintains constant light output. Similar circuits can be used for temperature-induced variations in photodiode applications.

B72-10226
IMPROVED FEEDBACK SHIFT REGISTER
M. Perlman
May 1972
NPO-10351

Design of feedback shift register with three tap feedback decoding scheme is described. Application for obtaining sequence synchronization patterns is examined. Operation of the circuitry is described and drawings of the systems are included.

B72-10236
ELECTRONIC SWITCHING CIRCUIT USES COMPLEMENTARY NON-LINEAR COMPONENTS
O. S. Zucker
Dec. 1972
AEC-10060

Inherent switching properties of saturable inductors and storage diodes are combined to perform large variety of electronic functions, such as pulse shaping, gating, and multiplexing. Passive elements replace active switching devices in generation of complex waveforms.

B72-10255
NARROWBAND, CRYSTAL-CONTROLLED BIOMEDICAL TELEMETRY SYSTEM
R. M. Westbrook and T. B. Fryer
Dec. 1972
ARC-10708

Telemetry system utilizing miniature, single-channel, crystal-controlled transmitter is described suitable for biomedical applications. Receiver used in conjunction with transmitter is narrowband superheterodyne FM receiver with crystal control in both conversion stages.

B72-10268**DRIVER CIRCUIT FOR INDUCTIVE LOADS**

W. A. Cooke (Lockheed Missiles and Space Co.)

1972

ARC-10073

Circuit, based on use of power transistors which do not display second breakdown under valve loading, drives inductive loads. Peak voltages, power dissipations, heat sink requirements, and thermal stability considerations can be obtained by theoretical analysis.

B72-10275**AN INGESTIBLE TEMPERATURE-TRANSMITTER**

J. M. Pope, T. B. Fryer, and H. Sandler

Jul. 1972

ARC-10583

Pill-sized transmitter measures deep body temperature in studies of circadian rhythm and indicates general health. Ingestible device is a compromise between accuracy, circuit complexity, size and transmission range.

B72-10304**CONTROL OF OSCILLATIONS IN A DISCHARGE CIRCUIT**

D. Y. Cheng

Sep. 1972

ARC-10556

Development of electric discharge circuit damping element which increases in resistance with current and time is described. Damping element is resistor made of tungsten wire which has large resistance-temperature coefficient. Specifications of tungsten resistor and incorporation into circuit are explained.

B72-10308**A SIMPLE TACHOMETER CIRCUIT**

J. Dimeff

Sep. 1972

ARC-10603

Electric circuit to measure frequency of repetitive sinusoidal or rectangular wave is presented. Components of electric circuit and method of operation are explained. Application of circuit as tachometer for automobile is discussed.

B72-10315**SIMPLE NON-DESTRUCTIVE TESTS FOR ELECTROEXPLOSIVE DEVICES**

L. A. Rosenthal (Rutgers, Univ.) and V. J. Menichelli

Jun. 1972

NPO-11563

Electrothermal behavior of bridgewire-explosive interface is defined by pulsing electroexplosive device with a safe level of current and examining the resistance variation of bridgewire. Bridgewire provides signal which describes average wire temperature and heat sinking to the explosive and enclosure.

B72-10316**PROPERTIES OF IONIZATION BREAKDOWN OF AIR AT MICROWAVE FREQUENCIES AND OPTIMIZATION OF COMPONENT DIMENSIONS FOR MAXIMUM MICROWAVE POWER**

L. L. Rainwater (Sperry Rand Corp.)

Jul. 1972

M-FS-21924

Method provides optimization of dimensions in vented RF components for predictable performance at critical pressures, eliminates leakage from hermetically sealed types, and utilizes coaxial RF multicouplers.

B72-10347**OVERLAP DIFFUSION FOR INCREASING PHOTOTRANSISTOR DYNAMIC RANGE**

D. H. McCann (Westinghouse Elec. Corp.)

Jul. 1972

M-FS-20407

Construction of improved phototransistors to provide increased base-collector capacitance is described. Silicon or germanium semiconductor wafers are used as examples. Operation of

transistors and electrical properties are discussed and illustrations of the devices are included.

B72-10363**IMPROVED UNIVERSAL ELECTRICAL CONNECTOR**

B. W. Kennedy

Jul. 1972

M-FS-14741

Universal electrical connector for use with various types of electric cable, inserts, and pin styles is described. Connector may be used over variety of environmental conditions. Details of construction are discussed. Illustrations of connector are included.

B72-10369**A MANUALLY SET MAGNETIC WIRE COUNTER**

Innovator not given (Sandia Labs.) Dec. 1972

AEC-10039

Magnetic storage wire counter design principles are given. Magnetic storage wire was coupled with two phase propagational driver in manual set counter shift register. Time delay between magnetic counter domain insertion and corresponding output pulse provides counting functions.

B72-10370**TWO-STAGE MAGNETOMETER MEASURES WEAK MAGNETIC FIELDS**

R. W. Buntinbach

Dec. 1972

AEC-10068

Sensitive magnetometer capable of measuring field strengths of 10 nanogauss is described. High permeability core is aligned parallel to magnetic field in first stage. In second stage, ferromagnetic toroid saturates rapidly. Adjustment of turns and area ratios of each stage provides wide range of sensitivities.

B72-10376**A SONIC TRANSDUCER TO DETECT FLUID LEAKS**

I. Cimerman (Dynamatec Corp.) and J. Janus (Dynamatec Corp.) Jul. 1972 See also NASA-CR-124618

KSC-10704

Ultrasonic detector utilizes set of contact transducers and bandpass filters to detect and analyze sonic energy produced by flow or leakage. Detector covers wide frequency range and is operable at cryogenic temperatures and in vacuum.

B72-10393**GUIDELINES FOR FABRICATION OF HYBRID MICROCIRCUITS**

W. D. McKee, Jr. (N. Am. Rockwell Corp.), J. E. Varga (N. Am. Rockwell Corp.), J. V. Brandewie (N. Am. Rockwell Corp.), and A. P. Poole, Jr. (N. Am. Rockwell Corp.)

Jul. 1972

M-FS-21964

Document is summary of approaches that may be taken in designing hybrid microcircuits similar to those for aerospace application.

B72-10452**MINIATURE INTERMITTENT CONTACT SWITCH**

A. Sword (Stanford Univ.)

Aug. 1972

ARC-10450

Design of electric switch for providing intermittent contact is presented. Switch consists of flexible conductor surrounding, but separated from, fixed conductor. Flexing of outside conductor to contact fixed conductor completes circuit. Advantage is small size of switch compared to standard switches.

B72-10453**CURRENT SWITCH HAS BUILT-IN TIME DELAY: A CONCEPT**

C. D. Jesch (N. Am. Rockwell Corp.)

Aug. 1972

MSC-17324

Switch concept provides simple means of achieving electro-mechanical time delay function. Unit consists of reed-type circuit

01 ELECTRONICS/ELECTRICAL

breaker enclosed by copper tubing with electromagnetic coil wound around tubing and entire assembly mounted on insulating platform. Characteristics are affected only by geometry of system so device is expected to be very stable.

B72-10455

NEW METER PROBES PROVIDE PROTECTION FROM HIGH CURRENT POWER SOURCES AT POTENTIALS UP TO 600 VOLTS

H. Long and J. Getsug

Aug. 1972

LANGLEY-10804

Meter probes incorporating integral fuse holder which contains limitation fuse of 600 V, 5A, with interruption rating of 50,000 KVA, provide required protection and minimize danger incurred by defective or improperly operated meter.

B72-10462

INTERFEROMETER USING RF SWITCHING MATRIX

R. N. VanVleet (GE)

Aug. 1972

GSFC-11051

Radio frequency switching technique for single receiver and data processing channel to be used for phase movement measurement is discussed. Components of interferometer radio frequency unit, X-band receiver, and interferometer data processing unit are illustrated. Elimination of major measurement error source is described.

B72-10463

AMPLIFIER FOR SIGNAL FROM THIN FILM TRANSDUCER

K. A. Jensen

Aug. 1972

LEWIS-11494

Electronic circuitry is devised to raise low level signal from platinum film type transducer to sufficient amplitude to trigger oscilloscope or time interval counter. Circuit can be used wherever it is necessary to raise level of low amplitude, low impedance positive polarity pulse source to a 5 or 6 volt level.

B72-10474

SPECIFICATION GUIDELINES FOR HYBRID MICROCIRCUITS

S. V. Caruso

Aug. 1972

M-FS-22090

Guidelines establishing manufacturing and control procedures for hybrid microcircuits used in aerospace programs may have possible commercial and industrial applications. Guidelines encompass parts, materials, and process controls, as well as assembly, packaging methods, screening, and inspection procedures for procurement of custom packaged, high reliability microcircuits.

B72-10477

LOW FREQUENCY SINUSOIDAL PRESSURE GENERATOR

J. S. Curreri

Aug. 1972 See also NASA-TN-D-6166

LEWIS-11465

Low frequency pressure generator is built to provide sinusoidal driving function in frequency range from 0.05 to 50 Hz for frequency response testing of pressure transducers used in liquid-filled systems. Generator consists of piston-in-cylinder, scotch-yoke mechanism machined into piston, and adjustable eccentric.

B72-10479

IMPROVED OPERATION OF RECHARGEABLE OXYGEN ELECTRODES

P. A. Malachuk (Tyco Corporate Technol. Center) and G. L. Holleck (Tyco Corporate Technol. Center)

Aug. 1972 See also NASA-CR-72999

LEWIS-11619

Procedure for enhancing operating life and performance of oxygen electrodes in rechargeable metal-oxygen batteries and hydrogen-oxygen fuel cells is discussed. Accumulation of refractory anodic oxide layer and inhibiting effects on oxygen reduction

are described. Improvements in service life of batteries by following procedure are explained.

B72-10480

HIGH INTENSITY SOLAR CELL RADIOMETER

H. W. Brandhorst and E. W. Spisz

Aug. 1972

LEWIS-11549

Device can be employed under high intensity illumination conditions such as would occur in a close-solar-approach space mission or in monitoring high intensity lamps. Radiometer consists of silicon solar cells with thin semi-transparent coatings of aluminum deposited on the front surfaces to permit transmission of small percentage of light and reflect the remainder.

B72-10492

IMPROVED ELECTRICAL SPOT TERMINALS

C. D. Baker

Aug. 1972

NPO-10034

Improved electrical spot terminal has been developed which can be rigidly attached to terminal mounting board. Mounting board is bonded to epoxy board which in turn is bonded to printed circuit board with high temperature adhesive. Conductive lead is coupled between electrical terminal and circuit trace on circuit board. Shape is usually clover-leaf.

B72-10505

NOVEL DIELECTRIC REDUCES CORONA BREAKDOWN IN ac CAPACITORS

J. L. Loehner (McDonnell-Douglas Corp.)

Aug. 1972

M-FS-21486

Dielectric system was developed which consists of two layers of 25-gage paper separated by one layer of 50-gage polypropylene to reduce corona breakdown in ac capacitors. System can be used in any alternating current application where constant voltage does not exceed 400 V rms. With a little research it could probably be increased to 700 to 800 V rms.

B72-10506

WATERTIGHT LOW-COST ELECTRICAL CONNECTOR

J. E. Dudenhofer and M. N. Miraldi

Dec. 1972

LEWIS-11552

Fabrication is described of waterproof electrical connector assembly for use with Teflon jacketed cables and constructed so that assembly will remain sealed under extreme environmental conditions. Conditions are specified as: pressure from vacuum to atmospheric; temperature from 280 K to 450 K; exposure to saturated steam; and steam suddenly introduced into vacuum.

B72-10518

A VOLTAGE-TUNABLE THREE-TERMINAL GUNN DEVICE

R. J. Schwartz (Purdue Univ.) and J. J. Nahas (Purdue Univ.)

Aug. 1972

HQ-10783

Newly developed Gunn oscillator is three-terminal device which consists of piece of gallium arsenide with source, drain, and gate contacts. Voltage tunable three-terminal device does not require bulky resonant cavity and allows oscillation frequency to be rapidly tuned with simple circuitry.

B72-10523

MECHANICALLY AND THERMALLY STABLE MASER CAVITY RESONATOR

R. F. C. Vessot (Smithsonian Astrophys. Obs.), T. E. Hoffman (Smithsonian Astrophys. Obs.), and M. W. Levine (Smithsonian Astrophys. Obs.)

Aug. 1972

HQ-10790

New type cavity resonator is designed for hydrogen maser. Resonator consists of three pieces of glass-ceramic material having extremely low thermal coefficient of expansion and provides very stable mechanical tuning.

B72-10527**Al/Cl₂ MOLTEN SALT BATTERY**

J. Giner (Tyco Labs., Inc.)

Aug. 1972

HQ-10696

Molten salt battery has been developed with theoretical energy density of 5.2 j/kg (650 W-h/lb). Battery, which operates at 150 C, can be used in primary mode or as rechargeable battery. Battery has aluminum anode and chlorine cathode. Electrolyte is mixture of AlCl₃, NaCl, and some alkali metal halide such as KCl.

B72-10530**CATHODE FOR USE WITH LOW DENSITY GASES**

W. H. Bennett (N. C. State Univ.)

Aug. 1972

HQ-10687

Method for preventing deterioration of mixed oxide cathodes in low density gas tubes caused by ion bombardment is discussed. Construction of cathode is described and illustration is furnished. Electron emission through space charge to neutralize ion-filled regions is basic process.

B72-10555**ELECTRONIC INTEGRATOR FOR GYRO RATE OUTPUT VOLTAGES**

R. A. Crawford, P. J. Hand, and H. H. Horiuchi

Sep. 1972

NPO-11499

Circuit which integrates spacecraft gyro output voltages to provide analog position signals has been developed. Accurate integration is provided by all solid state system which uses no choppers and takes advantage of commercially available flight qualified components.

B72-10561**PHOTOMULTIPLIER BLANKING CIRCUIT**

J. O. McClenahan

Sep. 1972

ARC-10593

Circuit for protecting photomultiplier equipment from current surges which occur when exposed to brilliant illumination is discussed. Components of circuit and details of operation are provided. Circuit diagram to show action of blanking pulse on zener diode is included.

B72-10578**AN ABSENTEE MONITORING DEVICE**

A. L. Meadows (Boeing Co.) and D. C. Birch (Boeing Co.)

Sep. 1972

KSC-10668

Development of audio alarm system to provide remote monitoring of warning devices is discussed. Device uses photodiode connected to self-powered audio alarm unit. Photograph of equipment is included.

B72-10643**REDUNDANCY APPROACHES IN BUBBLE DOMAIN MEMORIES**

G. S. Almasi (IBM) and S. E. Schuster (IBM)

Oct. 1972

M-FS-21915

Fabrication of integrated circuit chips to compensate for faulty memory elements is discussed. Procedure for testing chips to determine extent of redundancy and faults is described. Mathematical model to define operation is presented. Schematic circuit diagram of test equipment is provided.

B72-10646**DUAL FIELD ALIGNMENT DISPLAY AND CONTROL FOR ELECTRON MICROPATTERN GENERATOR**

P. R. Malmberg (Westinghouse) and T. W. O'Keeffe (Westinghouse)

Oct. 1972

M-FS-22118

Application of electron beam lithography to replace photolithography process in fabrication of integrated circuits is discussed. Procedure for using electron beam lithography equipment is

described. Diagram of electron micropattern generator is provided.

B72-10673**HIGH TEMPERATURE GALLIUM PHOSPHIDE RECTIFIERS**

M. G. Craford (Monsanto Co.) and D. L. Keune (Monsanto Co.)

Dec. 1972 see also NASA-CR-2098

LEWIS-11804

Development of high reverse breakdown voltage and low forward voltage drop stability in high power Schottky GaP rectifier for high temperature application is reported.

B72-10691**DIODE-QUAD BRIDGE FOR REACTIVE TRANSDUCERS AND FM DISCRIMINATORS**

D. R. Harrison and J. Dimeff

Oct. 1972

ARC-10364

Diode-quad bridge circuit was developed for use with pressure-sensitive capacitive transducers, liquid-level measuring devices, proximity deflection sensors, and inductive displacement sensors. It may also be used as FM discriminator and as universal impedance bridge.

B72-10696**DEVELOPMENT OF CHIP PASSIVATED MONOLITHIC COMPLEMENTARY MISFET CIRCUITS WITH BEAM LEADS**

L. J. Ragonese (GE), M. J. Kim (GE), B. L. Corrie (GE), J. W. Brouillette (GE), and R. E. Warr (GE)

Dec. 1972 See also NASA-CR-123742

M-FS-22264

Fabrication method is described for alumina passivated silicon MISFET arrays. Technique involves total passivation beam-lead approach and provides completely sealed chip with double level interconnect capability. Refractory metal alloy is used to form interconnect system and obtain metal contacts that withstand temperatures of 873 K for short periods of time.

B72-10697**OPTIMAL READ/WRITE MEMORY SYSTEM COMPONENTS**

A. Kozma (Radiation, Inc.), A. Vander Lugt (Radiation Inc.), and D. Klinger (Radiation Inc.)

Dec. 1972

M-FS-22044

Two holographic data storage and display systems, voltage gradient ionization system, and linear strain manipulation system are discussed in terms of creating fast, high bit density, storage device. Components described include: novel mounting fixture for photoplastic arrays; corona discharge device; and block data composer.

B72-10705**WAVEGUIDE SWITCH PROTECTOR**

R. B. Kolbly

Oct. 1972

NPO-11592

Device for detecting excessive operation of electric motors used to drive waveguide switches is described. Purpose of device is to prevent burnout of electric motor in event of waveguide stoppage at some point other than extreme limits of travel. Operation of equipment, components used to sense motor performance, and schematic diagram are included.

B72-10719**IRRADIATION OF MOS-FET DEVICES TO PROVIDE DESIRED LOGIC FUNCTIONS**

V. Danchenko and D. H. Schaefer

Dec. 1972

GSFC-11061

Gamma, X-ray, electron, or other radiation is used to shift threshold potentials of MOS devices on logic circuits. Before irradiation MOS gates to be shifted are biased positive and other gates are grounded to substrate. Threshold lasts 10 years. Thermal annealing brings circuit back to original configuration.

B72-10729**FREQUENCY-TO-AMPLITUDE CONVERTER: A CONCEPT**

C. H. Stewart

Dec. 1972

MSC-12395

01 ELECTRONICS/ELECTRICAL

Circuit allows direct frequency to amplitude conversion without special counters and discriminators and provides for individual or simultaneous emphasis of high or low frequencies. Circuit is simple, small, light weight, and versatile in its frequency range and region of conversion.

B72-10731 INSULATED-GATE FIELD-EFFECT TRANSISTOR STRAIN SENSOR

C. Gross
Dec. 1972
LANGLEY-11012

Strain sensors that can be switched on and off were fabricated from p-channel IGFET on thin filament n-type silicon crystals with silicon dioxide layer sputtered over transistor for passivation. Applications include integration with microelectronic circuits for multiplexing.

B72-10735 A PANEL SPACE FOR RFI SHIELDING GASKET: A CON- CEPT

W. T. Goins (N. Am. Rockwell Corp.)
Dec. 1972
MSC-17827

Method for spacing and shielding console chassis from panel is described. Small Teflon buttons are force-fitted into standard holes in console.

B72-10737 WIDEBAND WATTMETER FOR INSTANT MEASUREMENT OF REAL POWER

L. G. Landes (Barnes and Reinecke, Inc.) and Y. Y. Liu (Barnes and Reinecke, Inc.)
Dec. 1972 See also NASA-CR-72752
LEWIS-11698

Portable, solid state wattmeter with wideband (dc to 1 MHz) linear multiplier which provides true four quadrant operation permitting instantaneous indication of real power as oscilloscope display is described.

B72-10741 DESIGN OF MICROSTRIP COMPONENTS BY COMPUTER

T. C. Cisco (CAED Corp.)
Dec. 1972
LANGLEY-11210

Development of computer programs for component analysis and design aids used in production of microstrip components is discussed. System includes designs for couplers, filters, circulators, transformers, power splitters, diode switches, and attenuators.

B72-10755 GATE PROTECTIVE DEVICE FOR SOS ARRAY

J. E. Meyer, Jr. (David Sarnoff Res. Center) and J. H. Scott (David Sarnoff Res. Center)
Dec. 1972
HQ-10745

Protective gate device consisting of alternating heavily doped n(+) and p(+) diffusions eliminates breakdown voltages in silicon oxide on sapphire arrays caused by electrostatic discharge from person or equipment. Diffusions are easily produced during normal double epitaxial processing. Devices with nine layers had 27-volt breakdown.

B73-10004 IMPULSE COMMUTATING CIRCUIT WITH TRANSFORMER TO LIMIT REAPPLIED VOLTAGE

J. H. McConville (Martin Marietta Corp.)
Mar. 1973
LEWIS-11849

Silicon controlled rectifier opens circuit with currents flowing up to values of 30 amperes. Switching concept halves both current and voltage in middle of commutating cycle thereby lowering size and weight requirements. Commutating circuit can be turned on or off by command and will remain on in absence of load due to continuous gate.

B73-10015 SIGNAL CONDITIONER FOR POTENTIOMETER TYPE TRANSDUCERS

E. C. Armentrout and E. Gross

Mar. 1973
LEWIS-11822

Low cost method is described for signal conditioning of pot-type transducers utilizing printed circuitry. Conditioner fits into standard rack, accommodates 56 channels, and can be operated by one attendant.

B73-10035 DIGITAL DATA COMMAND BUS

G. C. Milligan
Feb. 1973
NPO-11637

Command bus constructed from coaxial cable has short segments of its outer jacket and shield removed and replaced with small ferrite cores carrying multitrans windings connected to decoder. Device reduces number of wire pairs required to communicate command data to systems and subsystems.

B73-10054 GLASS ENCAPSULATION PROVIDES EXTRA PROTECTION FOR IC SEMICONDUCTOR DEVICES

W. L. Doelp, Jr. (Philco-Ford Corp.)
Feb. 1903
M-FS-21310

Oxide-passivated semiconductor chip is given protective glass coating by means of vapor deposition over metallic substrate of integrated circuit (IC). Method provides more reliable oxide-passivation and hermetic sealing in current use. Chips and scratches incurred during dicing, testing, and assembly are markedly reduced.

B73-10055 FLAT CONDUCTOR CABLE SURVEY

C. R. Swanson (Hayes Intern. Corp.) and G. L. Walker (Hayes Intern. Corp.)
Feb. 1973
M-FS-22493

Design handbook contains data and illustrations concerned with commercial and Government flat-conductor-cable connecting and terminating hardware. Material was obtained from a NASA-sponsored industry-wide survey of approximately 150 companies and Government agencies.

B73-10096 FABRICATION OF MAGNETIC BUBBLE MEMORY OVERLAY

Innovator not given (IBM) Mar. 1973
M-FS-22377

Self-contained magnetic bubble memory overlay is fabricated by process that employs epitaxial deposition to form multi-layered complex of magnetically active components on single chip. Overlay fabrication comprises three metal deposition steps followed by subtractive etch.

B73-10097 A PROPOSED ADJUSTABLE RF CABLE CONNECTOR

E. J. Stringer (Rockwell Intern. Corp.) and J. D. Doyle (Rockwell Intern. Corp.)
Mar. 1973
M-FS-24271

In system that requires negligible loss, it may be necessary to adjust cable length to exact multiple of transmitted wavelength. Adjustable cable connector saves time and cost by eliminating need to add to or cut from cable. Device was especially designed for use with high frequencies. For particular application, connector of suitable dimensions should be used.

B73-10109 A NEW PACKAGING AND TESTING CONCEPT FOR MICROELECTRONIC COMPONENTS

G. L. Filip and S. V. Caruso
May 1973
M-FS-20936

Parts are securely held on sealed, printed circuit board that is both package and test fixture. Parts can be handled, stored, and tested in sealed package.

B73-10135
LOW PHASE-NOISE DIGITAL FREQUENCY DIVIDER

G. F. Lutes
 Mar. 1973
NPO-11569

Digitally generated countdown pulse at submultiple frequency is applied to one electrode of FET gate to establish threshold state; gate cannot function until desired portion of reference half-wave pulse which is to be passed appears on second electrode.

B73-10136
BRAID READ-ONLY MEMORY

J. F. McKenna (MIT)
 Mar. 1973

NPO-11570

Transformer-type memory is fault-tolerant array of independent read-only memory units. Information pattern in each unit is written by weaving wires through array of linear (nonswitching) transformers. Presence or absence of a bit is determined by whether a given wire threads or bypasses given transformer.

B73-10139
SIMULTANEOUS PROCESSING OF VIBRATION TEST DATA

E. E. Reddeman
 Mar. 1973

NPO-11616

Data from record tracks of all accelerometers is injected simultaneously into electronic circuits which convert inputs into single, composite graphical representation. Three adequate methods of processing data: peak acceleration at a frequency, average of all channels, and quad-mean of all channels.

B73-10152
A VACUUM CHAMBER FEEDTHROUGH

V. D. Brown (Memphis State Univ.)
 Mar. 1973

M-FS-21133

Simple and inexpensive microwave feedthrough has been designed which transfers 130 ns, 5kV pulse into vacuum chamber. Feedthrough may be used over wide range and is adaptable to most coaxial cables, since either multistrand or single strand center conductor cable can be used.

B73-10160
SYNCHRO PHASE SELECTOR AID

F. H. Austin and G. C. Moen
 May 1973

LANGLEY-11282

Phase selector permits multiple leads of synchro devices to be randomly connected while proper interconnections are determined by operating selector switches. Operation of these switches varies both phase and rotation relationship of synchro devices.

B73-10164
LIQUID METAL POROUS MATRIX SLIDING ELECTRICAL CONTACT: A CONCEPT

H. Ferguson
 Jun. 1973

LEWIS-11735

Concept utilizes porous metal or nonmetal matrix containing liquid metal in porous structure and confines liquid metal to contact area between rotor and brush by capillary forces. System may also be used to lubricate bearing systems.

B73-10171
COMPACT 20-KILOAMPERE PULSE-FORMING-NETWORK CAPACITOR BANK

S. J. Posta and C. J. Michels
 May 1973

LEWIS-12009

Bank uses commercially available high-energy-density capacitors for energy storage and silicon-controlled rectifiers for switching. Low voltage design employing solid-state switching is utilized in lieu of conventional gas discharge switching.

B73-10174
COMPLEMENTARY MOS FOUR-PHASE LOGIC CIRCUITS
 H. L. Petersen (Lockheed Missiles & Space Co.) and D. K. Kinell (Lockheed Missiles & Space Co.)
 Jun. 1973

JSC-14240

Technique can provide four-phase clock signal from single-phase clock and requires only one power supply voltage. This arrangement saves considerable power compared to circuits having load resistor between power supply and ground.

B73-10179
MICROSTRIP ANTENNAS

J. Q. Howell
 Jun. 1973

LANGLEY-11284

It is possible to design and construct simple, efficient microwave antenna, either linearly or circularly polarized, which should be useful in phased arrays. Mounted on thin dielectric substrate, it extends slightly above ground plane. Space behind ground plane is required for feed line and mounting hardware.

B73-10185
PROPOSED ELECTROMAGNETIC WAVE ENERGY CONVERTER

R. L. Bailey (Catholic Univ.)
 Jun. 1973

GSFC-11394

Device converts wave energy into electric power through array of insulated absorber elements responsive to field of impinging electromagnetic radiation. Device could also serve as solar energy converter that is potentially less expensive and fragile than solar cells, yet substantially more efficient.

B73-10196
AN IMPROVED METHOD FOR OBTAINING A NORMALIZED JUNCTION TEMPERATURE FOR SEMICONDUCTORS: A CONCEPT

S. N. Trivedi (Martin Marietta Corp.)
 Jun. 1973

JSC-14136

Failure rate for given semiconductor device is simply determined by reading value of normalized junction temperature from printout for any given combination of ambient temperature, stress ratio, and maximum rated junction temperature, and obtaining corresponding failure rate from graph.

B73-10197
P-CHANNEL SILICONE GATE FET

S. Ostis (Sperry Rand Corp.) and D. S. Woo (Sperry Rand Corp.)
 Jun. 1973

M-FS-22505

Modified fabrication technique for P-channel MOSFET devices eliminates problems involving gate placement and gate overlap. Technique provides self-aligned gate, eliminating complexity of mask aligning. Devices produced by this process are considerably faster than conventional MOSFET's and process increases yield.

B73-10199
SRC SEAL TESTING

E. D. Miller (McDonnell Douglas Corp.) and G. J. Kohout (McDonnell Douglas Corp.)
 Aug. 1973

M-FS-22426

Small venthole drilled in semisealed silicon-controlled rectifier (SCR) cavity eliminates entrapped helium. Although these devices show slightly greater leak than those before lead installation, it is now possible to distinguish device with good hermetic seal from defective one.

B73-10211
MANUFACTURE AND QUALITY CONTROL OF INTERCONNECTING WIRE HARNESSSES

Jun. 1973

M-FS-22511

Four-volume series of documents has been prepared as standard reference. Each volume may be used separately and

01 ELECTRONICS/ELECTRICAL

covers wire and cable preparation as well as harness fabrication and installation. Series should be useful addition to libraries of manufactures of electrical and electronic equipment.

B73-10237 BATTERY CELL THERMAL-CONDUCTIVE COATING INCREASES EFFICIENCY

H. M. Doyle (Martin Marietta Corp.)
Aug. 1973

LANGLEY-10963

Thin coating of high-temperature epoxy resin provides necessary electrical insulation, as well as good thermal conductivity between battery cells. Insulation increases efficiency of nickel-cadmium battery, as it would any multicell battery assembly in which cell-to-cell thermal balance is critical.

B73-10249 RELIABLE LOW-COST BATTERY VOLTAGE INDICATOR FOR LIGHT AIRCRAFT AND AUTOMOBILES

R. L. Miller
Dec. 1973

LEWIS-12020

Voltage indicator fits into cigarette lighter socket and utilizes light emitting and Zener diodes to display three levels of battery voltage. Indicator is superior to typical conventional electrical system indicators in that it gives a positive discrete indication of battery voltage. It is simple, inexpensive, and rugged.

B73-10259 FREQUENCY SHIFTING WITH A SOLID-STATE SWITCHING CAPACITOR

R. J. Mattauch (Univ. of Virginia) and T. J. Viola, Jr. (Univ. of Virginia)
Sep. 1973

HQ-10812

Frequency shifting, commonly used in electronic signal processing, is applied in tuning, automatic frequency control, antenna element switching, phase shifting, etc. Frequency shifting can be accomplished economically and reliably with simple circuit comprising conventional resistor and solid-state switching device which can be equivalent to two capacitors, depending on switching state.

B73-10264 MULTILAYER FLAT ELECTRICAL CABLE

P. G. Silverman (TRW Systems Group)
Jun. 1973

ARC-10734

Flat electrical cable is lightweight, flexible over wide temperature range, withstands continuous exposure to high levels of nuclear radiation, and can carry high currents with minimum of temperature rise. Its magnetic cleanliness is equal to or better than twisted pair of wires, and it can be terminated in conventional electrical connector.

B73-10278 EVENT-SEQUENCE DETECTOR

M. F. Hanna
Jun. 1973

NPO-11703

Detector consists of matrix of storage elements which are activated by coincidence of failure-voltage pulses and clock pulses. Clock frequency used for event sequence detector can be selected to provide time resolution demanded by test at hand.

B73-10286 A NEW METHOD FOR THE DETERMINATION OF THIN FILM POROSITY

T. R. Beck (Boeing Co.), C. J. Bishop (Boeing Co.), and W. F. Springgate (Boeing Co.)
Sep. 1973

HQ-10673

Internal reflection spectroscopy may be used to determine presence of water in thin film pores. Presence of water in such pores is function of relative humidity and pore size. Thus, one can determine pore size by controlling humidity. Fluids with surface tension different from that of water can be used to detect pores.

B73-10292 MINIMAL HARDWARE, BINARY SEQUENCE PSEUDO- NOISE GENERATOR AND DETECTOR

M. Perlman
Jul. 1973 See also JPL-TR-32-1432

NPO-11406

General purpose sequence generator which includes 35-stage field shift register determines mathematical properties of polynomials such as divisibility, period, order of roots, and other parameters that effect desirability of various sequences for specific applications; for example, irreducible polynomials which characterize sequences with randomness properties.

B73-10295 SILICON SWITCHING TRANSISTOR WITH HIGH POWER AND LOW SATURATION VOLTAGE

E. Stonebraker (Westinghouse Elec. Corp.), D. Stoneburner (Westinghouse Elec. Corp.), and H. Ferree (Westinghouse Elec. Corp.)

Jul. 1973 See also NASA-CR-112870

NPO-11565

Assembly of two individually encapsulated silicon-chip transistors produces silicon power-transistor that has low electrical resistance and low thermal impedance. Electrical resistance and thermal impedance are low because of short lead lengths, and external contact surfaces are plated to reduce resistance at interfaces.

B73-10304 AN ELECTRIC MOTOR WITH MAGNETIC BEARINGS: A CONCEPT

P. A. Studer
Aug. 1973

XGS-07805

Because same magnetic flux is used to control rotor as to drive it, size, weight, and power required are minimized. Constant total current keeps motor torque invariant, and absence of mechanical bearings eliminates wear and reduces frictional power loss.

B73-10333 MILLIMETER-WAVE ANTENNA SYSTEM

J. Evans and W. I. Gould, Jr.
Sep. 1973

GSFC-10949

Parabolic reflectors fabricated from Carbon Fiber Reinforced Plastic (CFRP) composite material will not distort their shape by more than 3 percent of millimeter wavelength, despite large temperature differences on reflector surfaces. CFRP has zero thermal expansion. It is derived from charred polyacrylonitrile plastic filaments that are combined with epoxy resin.

B73-10346 OPERATIONAL SLOPE-LIMITING CIRCUIT

A. Engel
Aug. 1973

NPO-11773

Circuit limits slope of arbitrary waveform to avoid exceeding rate limit of subsequent amplifier, or to form trapezoidal wave with adjustable rise and fall rates from square wave of arbitrary frequency. Integrator provides delay needed to develop output waveform. DC coupling is used to preserve original dc offset.

B73-10350 ALL-DIGITAL PHASE-LOCK LOOPS FOR NOISE-FREE SIGNALS

T. O. Anderson
Aug. 1973

NPO-11914

Bit-synchronizers utilize all-digital phase-lock loops that are referenced to a high frequency digital clock. Phase-lock loop of first design acquires frequency within nominal range and tracks phase; second design is modified for random binary data by addition of simple transition detector; and third design acquires frequency over wide dynamic range.

B73-10351
FREQUENCY CONTROL CIRCUIT FOR ALL-DIGITAL PHASE-LOCK LOOPS

T. O. Anderson
 Aug. 1973 See also B73-10350
NPO-11936

Phase-lock loop references all its operations to fixed high-frequency service clock operating at highest speed which digital circuits permit. Wide-range control circuit provides linear control of frequency of reference signal. It requires only two counters in combination with control circuit consisting only of flip-flop and gate.

B73-10356
DATA-AIDED CARRIER TRACKING LOOPS

W. C. Lindsey and M. K. Simon
 Aug. 1973
NPO-11282

Power in composite signal sidebands is used to enhance signal-to-noise ratio in carrier tracking loop, thereby reducing radio loss and decreasing probability of receiver error. By adding quadrature channel to phase-lock-loop detector circuit of receiver, dc component can be fed back into carrier tracking loop.

B73-10366
SAFE ELECTRICAL RECEPTACLE AND MODIFIED PLUG

L. W. Rabb (Boeing Co.)
 Oct. 1973
KSC-10817

Recently-developed electrical receptacle has internal sliding protective cover that prevents accidental contact with live terminals. Sliding protective cover is used in combination with modified male plug. Design provides excellent protector against electrical shock and should interest manufacturers of electrical connectors.

B73-10368
A HIGH-SPEED SPECTROGRAPH SHUTTER

M. H. Miller (Maryland Univ.) and S. M. Wood, Jr. (Maryland Univ.)
 Oct. 1973 See also NASA-CR-72660
HQ-10635

Device can operate in close-open-close mode. Beam splitter placed behind static-slit assembly allows use of more than one camera. Each frame in particular series may be conveniently varied in exposure time and spacing. This can be done independent of other frames in the series. In "open" position, shutter transmits light over wide wavelength range.

B73-10374
SILICON-FIBER BLANKET SOLAR-CELL ARRAY CONCEPT

J. T. Eliason (Sperry Rand Corp.)
 Oct. 1973
M-FS-22458

Proposed economical manufacture of solar-cell arrays involves parallel, planar weaving of filaments made of doped silicon fibers with diffused radial junction. Each filament is a solar cell connected either in series or parallel with others to form a blanket of deposited grids or attached electrode wire mesh screens.

B73-10386
NOMOGRAPH FOR PREDICTION OF RF-BREAKDOWN VOLTAGES

F. S. Hickernell (Motorola, Inc.) and B. E. Mathes (Motorola, Inc.)
 Sep. 1973
NPO-11819

Information in nomograph is derived from data obtained from RF-breakdown tests on components of uniform and nonuniform geometry. Nomograph also can be used in design work to predict breakdown margins; if operational minimum pressure is established giving minimum value on nomograph, minimum breakdown voltage consistent with allowed value can be predicted.

B73-10387
GATED COMPRESSOR, DISTORTIONLESS SIGNAL LIMITER

R. C. Woodbury
 Sep. 1973
NPO-11820

Comparator/multiplier arrangement is capable of limiting input power to voice coil so that desired maximum current level is never exceeded. Overall test system consists of signal source which produces frequency spectrum required for acoustic test, gated compressor circuit, and power amplifier feeding transducer.

B73-10390
SAMPLING COMMAND GENERATOR CORRECTS FOR NOISE AND DROPOUTS IN RECORDED DATA

T. O. Anderson
 Sep. 1973
NPO-11886

Generator measures period between zero crossings of reference signal and accepts as correct timing points only those zero crossings which occur acceptably close to nominal time predicted from last accepted command. Unidirectional crossover points are used exclusively so errors from analog nonsymmetry of crossover detector are avoided.

B73-10393
WELDED PRINTED CIRCUIT (PC) STICK

F. Kreis
 Oct. 1973
GSFC-11773

Printed-circuit stick module has reduced comb technique to six steps, cutting process time by approximately 50%. Method incorporates all type of components into one assembly. It reduces design and fabrication time for 14-lead flat pack to less than four hours and for the 22-lead flat pack to four hours. Average weight of each flat pack is also reduced to 2 g.

B73-10427
HERMETIC-COAXIAL PACKAGE DESIGN FOR MICROWAVE TRANSISTORS

D. S. Jacobson (RCA)
 Dec. 1973
GSFC-10791

Semiconductor package has been developed for high power semiconductor devices that operate in the GHz-frequency range at several watts. Package includes stud, insulating ring, electrically conductive washer, insulating washer, braze ring, and cap. It is mechanically strong and can be used with variety of circuits.

B73-10442
GaAs TRANSISTORS FORMED BY Be OR Mg ION IMPLANTATION

R. G. Hunsperger (Hughes Aircraft Co.) and O. J. Marsh (Hughes Aircraft Co.)
 Feb. 1974
LANGLEY-11204

N-p-n transistor structures have been formed in GaAs by implanting n-type substrates with Be ions to form base regions and then implanting them with 20-keV Si ions to form emitters. P-type layers have been produced in GaAs by implantation of either Mg or Be ions, with substrate at room temperature, followed by annealing at higher temperatures.

B73-10459
DESIGN PARAMETERS FOR TOROIDAL AND BOBBIN MAGNETICS

W. T. McLyman
 Feb. 1974 See also JPL-TM-33-651
NPO-13441

Handbook has been published to facilitate conversion to metric system. Conversion data makes it possible for transformer designers to obtain fast and close approximation of significant parameters. For greater convenience, derivations of some transformer and inductor parameters are also presented.

B73-10476
PLUG-IN INTEGRATED/HYBRID CIRCUIT

01 ELECTRONICS/ELECTRICAL

E. J. Stringer (Rockwell Intern. Corp.)
Mar. 1974

M-FS-24470

Hybrid circuitry can be installed into standard round bayonet connectors, to eliminate wiring from connector to circuit. Circuits can be connected directly into either section of connector pair, eliminating need for hard wiring to that section.

B73-10509

RF SHIELDED CONNECTORS

A. Fisher and C. Clatterbuck
Mar. 1974

GSFC-11215

Gap, where cable joins connector housing, is shielded effectively by composite RF shielding made from suitable potting resin material (fumed silica, thixotropic prepolymer composition), conductive coating (silver-filled, flexible, polyurethane resin), and protective jacket (wax coated housing formed around another wax form having contours shaped to match configuration).

B73-10512

NEW STANDOFFS PROVIDE HIGH-RELIABILITY COMPONENT MOUNTING FOR PRINTED WIRING BOARDS

W. H. McCandliss (Martin Marietta Corp.)
Mar. 1974

LANGLEY-11176

Designs provide such advantages as inspectable solder joints from both sides of boards; stress relief in lead wires; low-impedance thermal paths; matched coefficients of lead wire thermal expansion; minimum webbing of conformal coatings to lead wires; positive mounting of part bodies to boards; and conductive mass for transient heat sink requirements.

B73-10515

CORRUGATED BATTERY ELECTRODE

J. McCallum (Battelle Mem. Inst.)
Mar. 1974 See also B73-10519

GSFC-11368

Performance of porous electrodes in batteries and other electrochemical cells is greatly improved when supports for active material have pores of uniform size, extending completely through electrodes, from side to side, with no interconnections between pores.

B73-10519

HONEYCOMB BATTERY PLAQUE

G. R. Schaer (Battelle Mem. Inst.)
Mar. 1974 See also B73-10515

GSFC-11367

Performance of porous electrodes in batteries and other electrochemical cells is greatly improved when supports for active material have pores of uniform size, extending completely through electrodes, from side to side, with no interconnections between pores.

B73-10520

DESIGN METHOD FOR MINIMIZING RF VOLTAGE BREAKDOWN

R. T. Woo

Mar. 1974 See also JPL-TR-32-1500

NPO-13408

Research study was conducted and results were published. Using principles of similarity and minimum of experimental data, a number of universal curves have been constructed covering wide range of experimental parameters. Gases other than air, such as argon and carbon dioxide, also are included in study.

B74-10006

HIGH VOLTAGE SOLID-STATE RELAY

B. L. Sater, T. J. Riley, and W. A. Janssen (Sterer Eng. and Mfg. Co.)

Mar. 1974 See also NASA-TM-X-68248

LEWIS-12096

Hybrid microelectronics relay has characteristics significantly superior to conventional solid state relays. Relay provides 2500 Vdc input to output isolation and operates from high threshold

logic signal to switch load of 400 Vdc at 2 mA Technology should be of interest to manufacturers of discrete components

B74-10015

LOW COST INSTRUMENTATION AMPLIFIER

J. C. Sturman
Jun. 1974

LEWIS-12222

Amplifier can be used for many applications requiring high input impedance and common mode rejection, low drift, and gain accuracy on order of one percent. Performance of inexpensive amplifier approaches that of some commercial instrumentation amplifiers in many specifications.

B74-10026

RADIATION HARDENING OF METAL-OXIDE SEMICONDUCTOR (MOS) DEVICES BY BORON

V. Danchenko
Apr. 1974

GSFC-11425

Technique using boron effectively protects metal-oxide semiconductor devices from ionizing radiation without using shielding materials. Boron is introduced into insulating gate oxide layer at semiconductor-insulator interface.

B74-10047

THREE-POINT BRIDGE CALIBRATION WITH ONE RESISTOR

D. R. Harrison and R. M. Brown
May 1974

ARC-10762

Method calibrates transducer bridge curing unbalanced condition and line resistance errors are negligible. Series resistance method can be automated easily and controlled by 2-bit information source which provide 4 states for switches.

B74-10064

ELECTROMETER SYSTEM MEASURES NANOAMPS AT HIGH VOLTAGE

J. C. Sturman, G. R. Sharp, R. R. Robson, N. J. Stevens, D. H. F. Priebe, and R. G. Wetli (Boeing Co.)
Jul. 1974

LEWIS-12267

Floating electrometer eliminates major source of error since any leakage from electrometer case, which is at high voltage, appears only as load on high voltage supply and not as part of current being measured. Commands to and data from floating electrometer are transferred across high voltage interface by means of optical channels.

B74-10068

ROTATING TURBINE BLADE PYROMETER

D. R. Buchele and D. J. Lesco
Aug. 1974 See also NASA-TM-X-68113

LEWIS-12218

Non-contacting pyrometer system optically measures surface temperature distribution on rotating turbine blade, comprising line-by-line scan via fiber optic probe. Each scan line output is converted to digital signals, temporarily stored in buffer memory, and then processed in minicomputer for display as temperature.

B74-10069

SELF-PROTECTING SOLID STATE ISOLATED SWITCH

A. C. Hoffman and S. T. Gooder
Aug. 1974

LEWIS-12268

Solid state switch has following capabilities: (1) Hybrid or IC from compatible with direct mounting on solar array substrate; (2) Continuous signal is not required to hold it in either on or off state; (3) Separate signal lines for on and off control; (4) Electrically isolated from input signals; and (5) Current surges will not cause switch failure.

B74-10079

VERY HIGH VOLTAGE LATCHING RELAY

R. R. Lovell, N. J. Stevens, and D. D. Renz
Aug. 1974

LEWIS-12265

Relay consists of high voltage reed switch actuated by rotating permanent magnet mounted on stepper motor shaft, with actuation assembly isolated from high voltage circuit. Unit can be modified for use as double pole or double pole double throw latching relay and can be used in either air or vacuum.

B74-10089**PIEZOELECTRIC RELAY**

D. H. Fryklund (Accumetrics Corp.)

Aug. 1974

GSFC-11627

Bimorph configurations reduce sensitivity to shock and vibration and yet respond to weak electric fields. Two bimorphs provide sum of individual movements, simulating double length.

B74-10090**EFFICIENCY INCREASED IN NEW SOLAR CELL: A CONCEPT**

J. A. Hutchby

Aug. 1974

LANGLEY-11174

Graded band-gap cell should be able to convert solar radiation into electrical energy more efficiently than any solar cell currently available. Thickness of band-gap region should be chosen to maximize both quantity of light absorbed in region and fraction of photogenerated charge carriers collect at junction.

B74-10100**THIN-FILM TEMPERATURE SENSOR**

J. Maserjian and J. R. Gatewood

Aug. 1974

NPO-11775

Sensor measures rapid temperature changes in fluid streams. Sensor withstands contacts with various corrosive fluids, high fluid-flow rates, and turbulences caused by rapid changes in flow rates. Capacitor is part of resonant bridge circuit which produces ac voltage that is proportional to temperature.

B74-10107**IMPROVED SOLID-STATE TRIODE CONSTRUCTION**

A. Shumka

Aug. 1974

NPO-13064

Triode is constructed from rectangular filament made of near-intrinsic n-type silicon. Collector and emitter are formed on opposite faces of filament and are spaced approximately 0.13 mm apart. Gate electrodes are alloyed to filament and extend longitudinally along midsection of other two opposite sides, approximately 0.06 mm apart.

B74-10110**INTEGRATED STRUCTURE VACUUM TUBE: A CONCEPT**

J. Dimeff and W. J. Kerwin (Univ. of Ariz.)

Aug. 1974

ARC-10445

Cathode emission is made to occur by heating entire structure to 600 C, and positive potential is applied to anode with negative potential on grids. Electron flow takes place from ring to circular anode through electric field produced by grids.

B74-10112**BIO-ISOLATED DC OPERATIONAL AMPLIFIER**

R. D. Lee

Aug. 1974

ARC-10596

Possibility of shocks from leakage currents can be reduced by use of isolated preamplifiers. Amplifier consists of battery-powered operational amplifier coupled by means of light-emitting diodes to another amplifier which may be grounded and operated from ac power mains or separate battery supply.

B74-10120**DECIMAL DIGIT GENERATOR FOR COMMUTATED DATA: A CONCEPT**

S. J. Rusk (Lockheed Missiles and Space Co.)

Aug. 1974

ARC-10856

Perform analog-to-digital conversion on input signal with staircase circuit having 10% resolution, convert digital result to analog voltage, subtract it from original input signal; read out feedback signals as decimal digit representation during one clock phase and servo-error difference between input and feedback as analog portion during following clock phase.

B74-10160**POCKET GAUGE FOR CHECKING INSERT CLOCKING OF MULTIPIN CIRCULAR CONNECTORS**

E. Billmeyer

Sep. 1974

NPO-11924

Prototype gauge has been constructed of heavy clear plastic with engraved degree lines, numerals, and alignment lines. With suitable modification, gauge can be mass produced. It could be marketed directly to users or to manufacturers of circular multipin connectors.

B74-10180**MINIATURE BIAXIAL STRAIN TRANSDUCER**

I. S. Hoffman

Oct. 1974

LANGLEY-11648

Transducer is completely reusable and permits relocation to alternate points to be accomplished quickly. Size permits measurements to be made simultaneously over small areas and yields outputs directly proportional to strains measured. Transducer verifies elastic modulus, Poisson's ratio, and principal strain axes on materials.

B74-10192**MICROELECTRONICS PACKAGING TECHNIQUE: A CONCEPT**

E. J. Stringer (Rockwell Intern. Corp.)

Nov. 1974

MSC-19399

Plug-in flat packs and flat conductor cable (FCC) can be used to make compact, lightweight, external monitoring system requiring minimum of hard wiring. Microelectronic monitoring panel includes replaceable integrated or hybrid circuit flat packs and FCC.

B74-10196**HEART-RATE PULSE-SHIFT DETECTOR**

M. Anderson (Northrop Corp./Electronics Div.)

Nov. 1974

ARC-10729

Detector circuit accurately separates and counts phase-shift pulses over wide range of basic pulse-rate frequency, and also provides reasonable representation of full repetitive EKG waveform. Single telemeter implanted in small animal monitors not only body temperature but also animal movement and heart rate.

B74-10197**REFERENCE APPARATUS FOR MEDICAL ULTRASONIC TRANSDUCER**

R. D. Lee, R. J. Hudock, and D. I. Shute

Nov. 1974

ARC-10753

Once reference apparatus has been located properly, and its position on chest of patient has been recorded on skin by means of indelible fiducial marks, it is simple matter at later time to reposition probe on chest over heart. In this way, signals from exact same area of heart can be re-examined.

B74-10209**INTERPLEX MODULATION AND A SUPPRESSED-CARRIER TRACKING LOOP FOR COHERENT COMMUNICATIONS SYSTEMS**

S. Butman and U. Timor

Nov. 1974

NPO-11572

Simple addition to hardware and new mode of operation of transmitter and receiver in coherent, PCM/PSK/PM configuration

01 ELECTRONICS/ELECTRICAL

greatly improves channel efficiency. Procedure reduces amount of power lost to intermodulation products.

B74-10234

A METHOD FOR POLYCRYSTALLINE SILICON DELINEATION APPLICABLE TO A DOUBLE-DIFFUSED MOS TRANSISTOR

J. L. Halsor (Westinghouse Elec. Corp.) and H. C. Lin (Westinghouse Elec. Corp.)
Dec. 1974

LANGLEY-11536; LANGLEY-11598

Method is simple and eliminates requirement for unreliable special etchants. Structure is graded in resistivity to prevent punch-through and has very narrow channel length to increase frequency response. Contacts are on top to permit planar integrated circuit structure. Polycrystalline shield will prevent creation of inversion layer in isolated region.

B74-10239

IMPROVED CIRCUIT-BOARD INTERCONNECTORS

J. H. Martin (Charles Stark Draper Lab., Inc.)
Dec. 1974

MSC-12661

One component serves three functions, electrical interconnections, thermal control, and mechanical integrity, at same time. Several versions of design: (1) Insulated support plate contains holes; (2) Alternate support plate configuration uses rivets instead of pins; and (3) Another configuration includes leaf-spring contacts instead of pins or rivets.

B74-10242

HIGH-VOLTAGE DISTRIBUTORS

J. F. McChesney, Jr.
Dec. 1974

GSFC-11849

Two distributors reduce high-voltage breakdowns and corona discharges. Both distributors are constructed to prevent air traps and facilitate servicing without soldering. Occurrence of coronas is also minimized due to smooth surfaces of device.

B74-10251

PHASED-ARRAY ANTENNA PHASE CONTROL CIRCUIT USING FREQUENCY MULTIPLICATION

R. J. Mailloux and P. R. Caron
Jan. 1975

ERC-10285

Circuit separates out, from multiplied signals, antenna element signals which have desirable phase angles and feeds them to appropriate antenna elements of phased array. System may be used in either transmitting or receiving mode.

B74-10253

SELF-PROTECTED ELECTRODES LIMIT FIELD-EMISSION CURRENT

W. L. Lees
Jan. 1975

ERC-10015

One cathode includes array of square-shaped conductor columns. Columns are electrically interconnected by conducting plate on bottom. Each column provides field-emission current. Another cathode includes array of rodlike conductors. Layer is covered by control film made of conducting material. Film is isolated from each conductor.

B74-10255

AMPLITUDE-STEERED, PSEUDOPHASED ANTENNA ARRAY

C. C. Johnson, R. J. Martel (Westinghouse), F. J. Dietrich (Philco Ford Corp.), and G. J. Koloboff (Philco Ford Corp.)
Jan. 1975

GSFC-11446

Beam may be smoothly scanned around ring array without instantaneous phase transitions while maintaining constant radiated power by gradually transferring power from receding element to element next to leading edge of driven segment, and by accomplishing antenna element switching during intervals when no power is being applied to elements being switched.

B74-10256

SYNCHRONIZED FREQUENCY TRANSPOSER

J. F. Sutton
Jan. 1975

GSFC-11763

Transposer operates entirely in analog domain. Input analog signal is serially loaded into analog register at rate determined by voltage-controlled oscillator. At same time, signal is serially unloaded from other register at expanded time rate determined by divider output feeding through switch.

B74-10257

BIDIRECTIONAL ZOOM ANTENNA

R. F. Schmidt
Jan. 1975 See also B74-10041

GSFC-11862

Antenna comprises two parabolic cylinders placed orthogonally to each other. One cylinder serves as main reflector, and the other as subreflector. Cylinders have telescoping sections to vary antenna beamwidth. Beamwidth can be adjusted in elevation, azimuth, or both. Design has no restriction as to choice of polarization.

B74-10258

OPTICAL COMMUNICATION CHANNEL SIMULATOR SYSTEM

M. W. Fitzmaurice and M. Tycz
Jan. 1975

GSFC-11877

Optical transmission link is simulated by positioning linear optical modulator between optical carrier source and receiver for carrier. Optical modulator is driven by analog signal, derived from analog computer circuit, having random variations indicative of characteristics of transmission link.

B74-10259

COLOR-CODED AREA SENSITIVITY MAPS OF PHOTOMULTIPLIERS

O. Youngbluth, Jr.
Jan. 1975

LANGLEY-10320

Technique was devised specifically for testing photomultipliers and other photodetectors, but it could also be used to color code any type of mapping data, such as weather or topographical maps, thermal or pressure distributions on reentry surfaces, or any other three-dimensional data to be displayed in two-dimensional form.

diodes, fuses, inductors, microcircuits, relays, fixed resistors, transformers, and transistors. Each class is contained in separate section and includes discussion of inherent failure modes, screening rationale, general screening requirements, derating criteria, and stress-analysis data.

B74-10260

HORN ANTENNA WITH V-SHAPED CORRUGATED SURFACE

F. B. Beck, C. A. Mentzer (Ohio State Univ.), and L. Peters, Jr. (Ohio State Univ.)

Jan. 1975 See also NASA-CR-2317

LANGLEY-11112

Corrugated shape is easily machined for millimeter wave application and is better suited for folding antenna designs. Measured performance showed "V" corrugations and rectangular corrugations have nearly the same pattern beamwidth, gain, and impedance. Also, "V" corrugations have higher relative power loss.

B74-10262

DEPOSITING SPACING LAYERS ON MAGNETIC FILM WITH LIQUID PHASE EPITAXY

J. W. Moody (Monsanto Res. Corp.), R. W. Shaw (Monsanto Res. Corp.), and R. M. Sanford (Monsanto Res. Corp.)

Jan. 1975 See also NASA-CR-2413

LANGLEY-11528

Liquid phase epitaxy spacing layer is compatible with systems which are hard-bubble proofed by use of second magnetic garnet film as capping layer. Composite is superior in that: circuit

fabrication time is reduced; adherence is superior; visibility is better; and, good match of thermal expansion coefficients is provided.

B74-10274
DIGITAL SECOND-ORDER PHASE-LOCKED LOOP

J. K. Holmes, C. Carl, and C. R. Tagnelia

Jan. 1975

NPO-11905

Actual tests with second-order digital phase-locked loop at simulated relative Doppler shift of 1×0.0001 produced phase lock with timing error of 6.5 deg and no appreciable Doppler bias. Loop thus appears to achieve subcarrier synchronization and to remove bias due to Doppler shift in range of interest.

B74-10280
RELIABILITY DATA FOR ELECTRONIC AND ELECTRO-MECHANICAL COMPONENTS: A REPORT

W. R. Scott

Jan. 1975

NPO-13153

Ten classes of parts covered in report: capacitors, crystals, diodes, fuses, inductors, microcircuits, relays, fixed resistors, transformers, and transistors. Each class is contained in separate section and includes discussion of inherent failure modes, screening rationale, general screening requirements, derating criteria, and stress-analysis data.

B74-10281
STRAIGHT-LINE IC REMOVAL TOOL

R. A. Marzek and W. S. Read

Jan. 1975

NPO-13157

Tool operates by applying force perpendicularly to socket plane. Tool can be operated in cramped or confined quarters and can effect integrated circuit removal without damage. It may also be useful to hold nut or bolt in confined space while tightening, when it is not possible to use conventional tool.

B74-10282
DC-TO-AC INVERTER RATIO FAILURE DETECTOR

T. J. Ebersole (GE) and R. E. Andrews (GE)

Jan. 1975

NPO-13160

Failure detection technique is based upon input-output ratios, which is independent of inverter loading. Since inverter has fixed relationship between V-in/V-out and I-in/I-out, failure detection criteria are based on this ratio, which is simply inverter transformer turns ratio, K, equal to primary turns divided by secondary turns.

B74-10283
LOW-LOSS, CIRCULARLY-POLARIZED DICHROIC PLATE

R. T. Woo and A. Ludwig

Jan. 1975

NPO-13171

Dichroic plate has orthogonally-disposed, loaded dipole apertures with their orientations arranged so as to cancel cross-coupling effects which would otherwise result in power loss to circularly polarized signal.

B74-10286
MICROMETEOROID VELOCITY-AND-TRAJECTORY ANALYZER

S. O. Auer (Natl. Acad. of Sci.)

Feb. 1975

GSFC-11889

By adding potential energy of charged capacitor to kinetic energy of impacting particle, new technique causes major fraction of atoms in microscopic particle impacting on particle-receiving surface to be ionized. Chemical constituents of impacting particle are represented by generated ion mass spectrum in approximately correct proportions.

B74-10287
MICROMETEOROID COMPOSITION ANALYZER

S. O. Auer (Natl. Acad. of Sci.)

Feb. 1975

GSFC-11892

Technique has been developed to detect moving charged particles and to determine their positions and/or their velocity vectors, relative to three mutually orthogonal axes, without particle impact or any elements of detector and without changing particle charge or motion.

B74-10290
ALINEMENT FIXTURE FOR PRECISION CUTTING OF PRINTED-WIRING BOARDS

M. L. Holliday

Feb. 1975

LANGLEY-11658

Six alinement templates are used to trim-cut majority of boards fabricated. Their use has reduced time required for cutting operation and has also reduced high rejection rate of cut boards to near zero.

B74-10294
IMPROVED FABRICATION OF ELECTROLYTIC CAPACITORS

F. J. Gamari (Sprague Elec. Co.) and J. L. Moresi (Sprague Elec. Co.)

Feb. 1975

M-FS-23133

After processing parts for assembly, insulative cup is fitted to bottom of can, then electrolytic solution consisting of white sulfuric acid gel is inserted into can. Pellet is put in can and is fitted tightly into cup. Finally, bead weld is formed between can and header plug.

B74-10295
STABLE GROUP DELAY CABLE

P. A. Clements

Feb. 1975

NPO-13138

It was found that group delay is function of pressure in air dielectric coaxial cable. For example, 600-ft air dielectric cable will change phase 10 deg at 150 MHz when air pressure in cable changes from zero to 20 psi.

B75-10014
ISOMETRIC SCAN METHOD FOR ULTRASONIC EVALUATION OF COMPOSITE PANELS

A. Vary and R. L. Sorg

Apr. 1975

LEWIS-12437

I-scan form of data presentation provides more direct information on nature and severity of flaws present in test specimen and is more easily interpreted by inspector than conventional C-scans currently used. It also offers potential savings in inspection time and cost.

B75-10025
TRIELECTRODE CAPACITIVE PRESSURE TRANSDUCER

G. W. Coon

Feb. 1975

ARC-10711

Capacitive transducer eliminates adverse effects of temperature and humidity; it is especially suited for measuring pressure changes in high-temperature environment. Transducer basically is three-electrode device.

B75-10031
VARACTOR DIODE ASSEMBLY WITH LOW PARASITIC REACTANCES

L. E. Dickens (Westinghouse Elec. Corp.)

Apr. 1975

GSFC-11617

Development of varactor diode assembly overcomes parasitic reactances of conventional varactor packages. In specially constructed assembly very high idler-frequency to signal-frequency ratios are used to obtain low-noise operation over maximum bandwidth.

B75-10036
INTERFACE CONTROL SCHEME FOR COMPUTER HIGH-SPEED INTERFACE UNIT

B. K. Ballard (RCA)

01 ELECTRONICS/ELECTRICAL

Apr. 1975

M-FS-23083

Control scheme is general and performs for multiplexed and dedicated channels as well as for data-bus interfaces. Control comprises two 64-pin, dual in-line packages, each of which holds custom large-scale integrated array built with silicon-on-sapphire complementary metal-oxide semiconductor technology.

B75-10039

IMPROVED PRINTED WIRING BOARDS FOR HIGH-RELIABILITY CIRCUITS

W. J. Patterson

Apr. 1975

M-FS-23147

Experimental board includes three layers of special tridirectionally woven fabric. Alumina particles play major role in reducing coefficient of expansion. They also serve as heat sink for heat-generating components.

B75-10049

SHOCK AND VIBRATION ISOLATION MOUNT FOR SMALL ELECTRONIC COMPONENTS

F. R. Dillon (Martin Marietta Corp.) and C. R. Mayne

Apr. 1975

NPO-13253

Mount includes metallic cup and support ring placed in mold fixture. Viscoelastic material is injected between these parts by means of large hypodermic needle. Circular projections on cup and ring extend into material and are kept in place without dependence on quality of adhesion between material and metal.

B75-10069

HIGH-TEMPERATURE CAPACITIVE STRAIN MEASUREMENT SYSTEM

J. E. Wilson and L. R. Egger (Boeing Co.)

May 1975

FRC-10053

Capacitive strain gage and signal conditioning system measures stress-induced strain and cancels thermal expansion strain at temperatures to 1,500 F (815 C). Gage does not significantly restrain or reinforce specimen.

B75-10070

FOURIER WAVEFORM ANALYZER

F. J. Sutton

May 1975

GSFC-11747

Real-time Fourier analysis is provided by 'bucket brigade' charge-transfer shift register. Device is small, inexpensive integrated circuit which does analog-to-digital-to-analog conversion, data processing, and time delay.

B75-10071

HEATER IMPROVES COLD-TEMPERATURE CAPACITY OF SILVER-CADMIUM BATTERIES

W. H. Webster, Jr. and P. T. Jackson

May 1975

GSFC-11913

Eight heaters are included in 14-cell package to provide 14-Vdc. Each heater is 11-ohm self-adhesive strip placed across broad face of each pair of cells. They are installed before cells are wired. Heaters are in series and are connected through pair of redundant thermostats.

B75-10088

ONE-DIMENSIONAL MULTIMODE AND MULTISTATE OSCILLATOR: A CONCEPT

M. H. Aumann (Wisconsin Univ.)

Jun. 1975

HQ-10851

Device's voltage amplitude distribution is similar to that of standing waves on transmission line. It can be used for fast, efficient information encoding, decoding, and memory. Device operates in response to brief tone burst setting up standing-wave mode of oscillation which is unique for each possible burst frequency.

B75-10091

DUAL-BAND RIDGED WAVEGUIDE

M. J. Franke

Jun. 1975

LANGLEY-11781

Waveguide-in-waveguide technique involves routing two waveguides through same passageway. Smaller waveguide can be soft or silver soldered inside X-band waveguide to form single ridge guide and to propagate frequencies at C-band.

B75-10096

INTERACTIVE GRAPHICAL COMPUTER-AIDED DESIGN SYSTEM

M. T. Edge

Jun. 1975

M-FS-23157

System is used for design, layout, and modification of large-scale-integrated (LSI) metal-oxide semiconductor (MOS) arrays. System is structured around small computer which provides real-time support for graphics storage display unit with keyboard, slave display unit, hard copy unit, and graphics tablet for designer/computer interface.

B75-10101

HIGH-PERFORMANCE SCHOTTKY DIODES ENDURE HIGH TEMPERATURES

E. L. Dickens (Westinghouse Elec. Corp.), G. F. Trageser (Westinghouse Elec. Corp.), and B. H. Kim (Westinghouse Elec. Corp.)

Jun. 1975

M-FS-23184

Fabrication process and aluminum/GaAs (gallium arsenide) coupling are used to produce Schottky diodes that have high cutoff frequencies and can withstand operating temperatures in excess of 500 C.

B75-10102

INTEGRATED-CIRCUIT BALANCED PARAMETRIC AMPLIFIER

E. L. Dickens (Westinghouse Elec. Corp.)

Jun. 1975

M-FS-23193

Amplifier, fabricated on single dielectric substrate, has pair of Schottky barrier varactor diodes mounted on single semiconductor chip. Circuit includes microstrip transmission line and slot line section to conduct signals. Main features of amplifier are reduced noise output and low production cost.

B75-10109

FLUORESCENT COLOR CODING OF POWER RECEPTACLES

C. C. Oleson (Rockwell Intern. Corp.) and D. A. Vidana (Rockwell Intern. Corp.)

Jun. 1975

MSC-19504

Receptacles, color coded according to power ratings, can be easily located. Low-light visibility of fluorescent paint saves considerable time during repair or replacement. Technicians using flashlights have located and identified painted receptacles from as far away as 50 feet (15 meters).

B75-10120

MICROELECTRONIC FABRICATION OF SUPERCONDUCTING DEVICES AND CIRCUITS

K. R. Kirschman, E. J. Mercereau, and A. H. Notarys

Jun. 1975

NPO-13419

It is expected that thin-film superconductors can be used as detectors or sources of infrared and microwave radiation, as magnetometers, as voltage standards, and for voltage and current measurements, for electronic signal processing, and in digital circuitry.

B75-10171

SYSTEM FOR SIMULTANEOUS, BIDIRECTIONAL DATA TRANSMISSION

C. C. Schmidt (Lockheed Electronics Co.)

Aug. 1975

MSC-14810

Single, inexpensive system uses two identical circuits for simultaneous, bidirectional data transmission. Frequency response with currently available amplifiers is from dc to over 70 kHz.

B75-10195**STRIPE-LINE COIL FOR MAGNETIC-FIELD GENERATION IN BUBBLE MEMORY DEVICES**

T. T. Chen (Rockwell Intern. Corp.) and E. J. Ypma (Rockwell Intern. Corp.)

Sep. 1975

LANGLEY-11705

Coil etched from conductive film has better field uniformity than wire-wound coils and less coil loss at high-frequency operation.

B75-10196**LOW-LOSS STRIPE-LINE COIL FOR MAGNETIC BUBBLE MEMORY**

T. T. Chen (Rockwell Intern. Corp.) and L. C. Zachry (Rockwell Intern. Corp.)

Sep. 1975 See also B75-10195

LANGLEY-11707

Stripe-line pattern is etched on both sides of double-sided film. Since conductor thickness is only half that of single-sided film, problems in wrapping and etching are greatly reduced.

B75-10197**BUBBLE-DOMAIN CIRCUIT WAFER EVALUATION COIL SET**

T. T. Chen (Rockwell Intern. Corp.) and L. J. Williams (Rockwell Intern. Corp.)

Sep. 1975

LANGLEY-11728

Coil structures have been designed to permit nondestructive testing of bubble wafers. Wafers can be electrically or optically inspected and operated from quasi-static frequency to maximum device operating frequency.

B75-10213**MICROWAVE DIODE AMPLIFIERS WITH LOW INTERMODULATION DISTORTION**

W. H. Cooper (Westinghouse Elec. Corp.), M. Cohn (Westinghouse Elec. Corp.), and C. D. Buck (Westinghouse Elec. Corp.)

Oct. 1975

GSFC-11668

Distortions can be greatly reduced in narrow-band applications by using the second harmonic. The ac behavior of simplified diode amplifier has negative resistance depending on slope of equivalent I-V curve.

B75-10219**OPEN COIL STRUCTURE FOR BUBBLE-MEMORY-DEVICE PACKAGING**

T. T. Chen (Rockwell Intern. Corp.) and E. J. Ypma (Rockwell Intern. Corp.)

Oct. 1975

LANGLEY-11704

Concept has several important advantages over close-wound system: memory and coil chips are separate and interchangeable; interconnections in coil level are eliminated by packing memory chip and electronics in single structure; and coil size can be adjusted to optimum value in terms of power dissipation and field uniformity.

B75-10220**IMPROVED PHOTOVOLTAIC DEVICES, USING TRANSPARENT CONTACTS**

H. J. Hovel (IBM) and J. M. Woodall (IBM)

Oct. 1975

LANGLEY-11761

Transparent conducting coating is applied to narrow pn junction surface to provide ohmic contact for majority carrier flow. Coating can be made thick to prevent series resistance problem.

B75-10221**VARIABLE-GAP BIAS STRUCTURE FOR MAGNETIC BUBBLE MEMORY PACKAGE**

T. T. Chen (Rockwell Intern. Corp.)

Oct. 1975

LANGLEY-11765

Size and thickness of field adjusting plate can be varied. Memory chip specification is relaxed, since chips in structure need not be matched in bias margin.

B75-10222**A 1-1/2-LEVEL ON-CHIP-DECODING BUBBLE MEMORY CHIP DESIGN**

T. T. Chen (Rockwell Intern. Corp.)

Oct. 1975

LANGLEY-11766

Design includes multi-channel replicator which can reduce chip-writing requirement, selective annihilating switch which can effectively annihilate bubbles with minimum delay, and modified transfer switch which can be used as selective steering-type decoder.

B75-10230**ELLIPSOMETER MEASUREMENTS OF EPITAXIAL GAAS LAYERS: A CONCEPT**

J. D. DeSmet (Alabama Univ.)

Oct. 1975

M-FS-23238

Report discusses analysis involving Maxwell's equations formed in a 6-by-6 matrix. By applying boundary conditions at proper points in sample, equation for propagation of light through anisotropic medium is reduced to eigenvalue problem resulting in 4-by-4 matrix.

B75-10233**100-AMPERE-HOUR NICD BATTERY SYSTEM**

Innovator not given (Grumman Aerospace Co.) Oct. 1975 See also NASA-CR-140380; NASA-CR-140381; NASA-CR-141600

MSC-14774

Cells use potassium hydroxide electrolyte and are hermetically sealed in stainless steel casings. Each cell provides 1.56 volts and has a minimum operating life of 17,000 hours and a maximum of approximately 48,000 hours.

B75-10255**START/STOP SWITCHES FOR TESTING DETONATION VELOCITY OF EXPLOSIVES**

P. J. Wise and E. W. Grimes

Oct. 1975

KSC-10793

Printed-circuit process produces ordnance-initiated start/stop switches. Method is faster and less costly than fabrication by hand, and produces switches of uniform quality.

B75-10260**SIMPLE TEMPERATURE SENSOR WITH DIRECT READOUT**

W. A. Love (Rockwell Intern. Corp.)

Oct. 1975

LANGLEY-11818

Sensor is easy to construct, requires only one operational amplifier, and has very fast response. It provides direct readout of temperature on digital voltmeter.

B75-10274**RESPONSE OF TANTALUM CAPACITORS TO FAST TRANSIENT OVERVOLTAGES**

A. J. Zill and D. K. Castle

Oct. 1975 See also NASA-TM-X-58152

MSC-14822

Report describes tests used to determine minimum time for capacitors to fail due to overvoltage and maximum amount of overvoltage that capacitors could sustain without permanent damage.

01 ELECTRONICS/ELECTRICAL

B75-10277

HIGHLY STABLE ANALOG-TO-DIGITAL CONVERTER

H. C. Lucas

Oct. 1975

NPO-13385

Device has been developed for use in pulse-height analyzer of gamma-ray telescope. Unit shows integral linearity of 0.05 percent and differential linearity of less than 2 percent.

B75-10283

INEXPENSIVE POCKET-SIZE SOLAR ENERGY METER (INSOLOMETER)

F. A. Forestieri, M. T. Klucher, J. C. Adlard, and K. R. Shaltens

Nov. 1975

LEWIS-12598

Device directly measures amount of energy available in sunlight falling on the earth over range from 1 to 1250 watts per square meter. Insolometer is ideally suited to making on-site measurements of available solar energy.

B75-10289

SOLAR POWER ROOF SHINGLE

F. A. Forestieri, F. A. Ratajczak, and G. L. Sidorak

Dec. 1975

LEWIS-12587

Silicon solar cell module provides both all-weather protection and electrical power. Module consists of array of circular silicon solar cells bonded to fiberglass substrate roof shingle with fluorinated ethylene propylene encapsulant.

B75-10304

MICROCIRCUIT TESTING AND FABRICATION, USING SCANNING ELECTRON MICROSCOPES

P. D. Nicolas

Dec. 1975

M-FS-23159

Scanning electron microscopes are used to determine both user-induced damages and manufacturing defects subtle enough to be missed by conventional light microscopy. Method offers greater depth of field and increased working distances.

B75-10306

TEMPERATURE-STABLE GUNN-DIODE OSCILLATOR

E. J. Dengenford (Westinghouse Elec. Corp.), E. L. Dickens (Westinghouse Elec. Corp.), W. D. Maki, and A. B. Newman (Westinghouse Elec. Corp.)

Dec. 1975

M-FS-23242

Oscillator consisting of Gunn diode embedded in coaxial circuit has excellent temperature stability and low fabrication costs as compared with automatic-frequency-control crystal oscillators.

B75-10312

QUALITY CONTROL OF MICROELECTRONIC WIRE BONDS

A. R. Thiel (Gen. Dyn. Corp.) and D. C. Schmidt (Gen. Dyn. Corp.)

Dec. 1975

M-FS-23327

Report evaluates ultrasonic bonding of small-diameter aluminum wire joined to ceramic substrates metalized with thin-film and thick-film gold. Quick testing technique for nondestructive location of poor wire bonds is also presented.

B75-10324

ACID/ALKALI BROMIDE SECONDARY BATTERY

C. England

Dec. 1975

NPO-13237

Secondary electrochemical battery has been developed which has high energy/weight density. Battery is rechargeable and works on reaction between hydrogen and bromine.

B75-10330

HIGHLY-EFFICIENT HORN/REFLECTOR ANTENNA

A. K. Green (Microwave Res. Corp.)

Dec. 1975

NPO-13568

Antenna has beam efficiency of 96 percent. Configuration is compact and relatively inexpensive.

B75-10337

TRIGGER CIRCUIT FORCES IMMEDIATE SYNCHRONIZATION OF FREE-RUNNING OSCILLATOR

S. Nagano

Dec. 1975

NPO-13646

Device provides positive triggering for inverter synchronization in uninterruptible power supplies. Integrated-circuit oscillator frequency may be higher, lower, or the same as that of the synch pulse and is always synchronized by first clock pulse.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B70-10002

DEVICE FOR PRINTING ALPHANUMERIC LISTINGS

AND DIGITAL DATA PLOTS

OGLESBEE, J. DATE- APR. 1970

LEWIS-10954

Modified high-speed printer performs x-y plotting of digital data. The device produces a 7-inch square plot with any number of points in less than 25 seconds and has a resolution of 0.2 percent.

B70-10007

SLOW-SPEED DRIVES FOR MINIATURE DEVICES

BAHM, E. J. DATE- MAY 1970

NPO-10700

Hysteresis motor minimizes motor torque variations during shaft revolution when operated at high frequency and with a sinusoidal motor current. Motor speed is stabilized by a feedback servo.

B70-10008

TELEMETRY RECEIVER

GILCHRIST, C. GOLDSTEIN, R. MATHISON, R. DATE- AUG. 1970

NPO-10746

Communications system maintains phase lock of weak telemetry signals with a minimal expenditure of power and bandwidth. An estimate of the frequency variation as a function of time is used to achieve coherent phase demodulation.

B70-10009

DIGITAL DATA TRANSITION TRACKING LOOP

IMPROVES DATA RECEPTION

ANDERSON, T. O. HURD, W. J. LINDSEY, W. C. DATE- SEP. 1970

NPO-10844

Transition tracking loop eliminates drifts, leakages, and instabilities inherent in analog filters. Major components are the phase detector, loop filter, voltage-controlled oscillator and timing logic.

B70-10023

IMPROVED MAGNETRON COLD-CATHODE ION

SOURCE

ROEHRIG, J. /NORTON RES. CORP./ TORNEY, F. DATE- APR. 1970 REAN- SEE ALSO NASA-CR-66793

LANGLEY-10367

Cold cathode ionization source generates smaller amounts of spurious gases and has a higher sensitivity than commonly used hot-filament ion sources. Photon and X-ray background noise are reduced below detectable levels.

B70-10032

MOUNTING, SUPPORT, AND ISOLATION OF VARIOUS COMPONENTS OF A HYDROGEN MASER

CUTLER, L. /HEWLETT PACKARD/ VAN HEYST, H.

DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-94937

HQ-10563 HQ-10564

Polytetrafluoroethylene tubing partially collapsed during assembly protects the shields from thermal expansion stress in isothermal and magnetic canisters. Thermal insulation between the shields is made from epoxy foam cast in position and cured under high temperature. Stacked mounting array supports the maser's hexapole

02 ELECTRONIC/ELECTRICAL SYSTEMS

magnet and hydrogen atom source.

B70-10047

ARRAY MULTIPLIER

WANG, G. Y. DATE- DEC. 1970

ERC-90076

Digital array multiplier consisting of any number of identical digital adder cells in a repetitive planar configuration functions as a modular multiplier for use in computer applications of airborne vehicles. The modular multiplier utilizes large scale integration and metal oxide semiconductors.

B70-10056

THERMOELECTRIC RADIOMETER

BEAM, B. H. RUSSELL, L. D. DATE- JUN. 1970

ARC-10138

Radiometer measures microsecond pulses of radiant flux in the presence of electromagnetic noise. It consists of a charged capacitor that delivers a voltage pulse proportional to the thermally induced depolarization of its polymeric dielectric.

B70-10060

RANGING CODE PROCESSOR

ANDERSON, T. O. DATE- JUL. 1970

NPO-10066

System extracts range data from pseudorandom-coded range radar used to track a moving body. Pseudorandom binary waveforms with favorable correlation properties are transmitted and their reflections received and processed. The phase difference between the received and transmitted codes gives an accurate measure of the distance to the moving body.

B70-10069

RADIO FREQUENCY BASEBAND RECORDING

TECHNIQUE

HECKMAN, D. C. /GE/ DATE- JUN. 1970

HQ-10317

Technique uses a helical-scan video recorder with auxiliary signal-conditioning equipment to provide an inexpensive, high-capacity magnetic tape recording of a 112 channel, phase-locked, multiplexed, baseband signal.

B70-10086

PRECISE AUDIO-FREQUENCY MARKERS FOR NUCLEAR

MAGNETIC RESONANCE SPECTRA

COHEN, E. A. MANATT, S. L. DATE- APR. 1970

NPO-11147

System calibrates and records the responses of a nuclear magnetic resonance spectrometer. Calibration markers which have a highly stable frequency source are utilized to maintain frequency stability.

B70-10095

ANTENNA-ARRAY, PHASE QUADRATURE TRACKING

SYSTEM

CUBLEY, H. D. DATE- DEC. 1970

MSC-12205

Phase relationship between input signals appearing on widely-spaced parallel connected antenna elements in array is automatically adjusted in phase quadrature tracking system. Compact and lightweight design permit use in wide variety of airborne communications networks.

B70-10098

MULTI-FREQUENCY RESONANT ANTENNA

TEMPS, A. J., JR. /FAIRCHILD HILLER CORP./

VISSCHER, J. DATE- AUG. 1970 REAN- SEE ALSO

NASA-CR-82795

HQ-10215

Antenna is simultaneously resonant at 8.75 MHz, 11.825 MHz, and 20.562 MHz. It provides a near-field radiator which has a constant current distribution across its radiating elements for each of the resonant frequencies.

B70-10110

ELECTRONIC SLEEP ANALYZER

FROST, J. D., JR. /BAYLOR UNIV. COLL. OF MED./

DATE- APR. 1970

MSC-13282

Electronic instrument automatically monitors the stages of sleep of a human subject. The analyzer provides a series of discrete voltage steps with each step corresponding to a clinical assessment of level of consciousness. It is based on the operation of an EEG and requires very little telemetry bandwidth or time.

B70-10112

ANALYSIS AND OPTIMIZATION OF AN OMNIDIRECTIONAL DIRECTION-FINDING SYSTEM

BESTE, J. M. /AUBURN UNIV./ GRAF, E. R. DATE-

APR. 1970

M-FS-14346

System determines the direction of arrival of an electromagnetic wave with the direction information in a readily usable form. It presents a relatively small physical structure and does not require mechanical positioning.

B70-10115

NEW PROCEDURE FOR DESIGN OF SELF-ADAPTIVE CONTROL SYSTEMS

HOFMANN, L. G. /SYSTEMS TECHNOL., INC./ DATE-

FEB. 1970 REAN- SEE ALSO NASA-CR-1152

LANGLEY-10255

Adaptive control system compensates for changes in the dynamic characteristics of linear controlled elements. It is mechanized so that the actual input of each control approaches the ideal input.

B70-10128

WAVEFORM SIMULATOR SYNTHESIZES COMPLEX

FUNCTIONS

HALMBERG, J. /GULF GEN. ATOMIC, INC./ MOORE, C.

DATE- JUN. 1970

NPO-10251

Multichannel apparatus produces or simulates a complex curve which can be viewed on an oscilloscope display surface and can be adjusted to match an original complex experimentally produced curve.

B70-10138

ELECTRON ENERGY ANALYZER

SAMSON, J. A. R. /GCA CORP./ DATE- JUN. 1970

HQ-10373

Electrostatic deflection analyzer with three spherically concentric grids allows production of electrons within a small volume at the center of the inner sphere. By applying a retarding potential between the middle and inner spheres, the energies of the electrons can be measured.

B70-10143

LASER-DOPPLER GAS VELOMETER

HUFFAKER, R. M. DATE- APR. 1970

M-FS-20583

Three dimensional laser Doppler instrument measures both local mean and fluctuating gas velocity of air flow. Technique is used for measuring atmospheric wind velocity and turbulence. Under certain conditions liquid flows can be measured.

B70-10147

SOLID-STATE AC-TO-DC CONVERTER

MONROE, C. M. /GE/ DATE- JUN. 1970

HQ-10545

Converter uses solid-state ac-to-dc rectification circuitry, filter circuitry, a tuned transformer, ac chopper circuitry, and an automatic current-control network. It has a dc power source which operates from 5 to 100 percent load at a 72 to 94 input to output efficiency.

B70-10152

PERFORMANCE-LIMIT CRITERIA FOR THE DESIGN

OF FAST-RESPONSE SERVO-ACTUATION SYSTEMS

ZELLER, J. R. DATE- FEB. 1970 REAN- SEE ALSO

NASA-TN-D-5388

LEWIS-11022

Analysis of a typical nonlinear electrohydraulic servo-model establishes the dynamic-performance capabilities of servo-actuation systems.

B70-10159

BURST SYNCHRONIZATION DETECTION SYSTEM

LIPOMA, P. C. /LOCKHEED ELECTRON. CORP./ SEAY,

B. P., JR. DATE- APR. 1970

MSC-90317

02 ELECTRONIC/ELECTRICAL SYSTEMS

System uses digital logic and a voltage-controlled oscillator to obtain appropriate horizontal and vertical sync signals from the sync bursts contained in the original transmitted signal. It is useful in systems that exhibit considerable single amplitude fluctuation.

B70-10161

PRECISION FULL-WAVE RECTIFIER

DEBOO, G. J. HEDLUND, R. C. DATE- APR. 1970

ARC-10101

Simplified circuit uses one operational amplifier and two precision resistors. The amplifier is operated open loop for switching and closed loop for linear gain, both simultaneously.

B70-10163

COMMUNICATIONS LINK FOR SDS 900 SERIES COMPUTERS

LAYLAND, J. W. MARTIN, W. L. ZYGIEBAUM, A. I.

DATE- SEP. 1970

NPO-11161

High speed, self-clocking single channel control and data link apparatus interfaces between two computers. This combined system reduces data errors.

B70-10164

CONSTANT CURRENT SOURCE FOR CONVERTING ABSOLUTE TEMPERATURES TO ANALOG VOLTAGES

PADILLA, J. R. DATE- SEP. 1970

NPO-10733

Circuit configuration consisting of matched differential amplifier, temperature compensated zener diode, and low pinch-off-voltage field effect transistor provides accurate and stable current supply for temperature sensor devices.

B70-10169

REDUCTION OF BACKGROUND IN AN X-RAY

PROPORTIONAL COUNTER

GORENSTEIN, P. /AM. SCI. AND ENG., INC./

MICKIEWICZ, S. P. DATE- AUG. 1970 REAN- SEE ALSO

NASA-CR-96716

HQ-10253

Proportional counter has increased sensitivity for high resolution X-ray surveys. It locates weak cosmic X-ray sources while reducing non-X-ray background.

B70-10195

VOLTAGE REGULATOR WITH MULTIPLE PARALLEL POWER SOURCE SECTIONS

BINCKLEY, W. G. /TRW SYSTEMS GROUP/ WRIGHT, W.

H. DATE- APR. 1970

GSFC-10891

Voltage regulator provides improved voltage-regulating system in which power dissipation and consequent heat generation are minimized. Each power source section is controlled sequentially so that only one operates in a linear range at a time.

B70-10196

LASER ALTIMETER

KOLKER, M. /RAYTHEON CORP./ DATE- AUG. 1970

M-FS-13691

Ruby laser operating at 6943 angstroms at the heart of an electronic ranging system provides a highly accurate range measurement to an extremely small area.

B70-10211

HIGH EFFICIENCY OPTICAL BEAMSPLITTER

DESIGNED FOR OPERATION IN THE INFRARED

REGION

BASTIEN, R. C. /PERKIN-ELMER CORP./ HEINRICH, P.

L. DATE- SEP. 1970

GSFC-10721

Beamsplitter system uses potassium bromide as substrate for operating in the spectral region between 5 and 30 microns and calcium fluoride for narrowband applications. It uses a 13-layer film which yields nearly equal broadband infrared reflectance and transmittance.

B70-10212

SIMPLIFIED METHOD FOR MEASURING THE

IMPEDANCE OF RF POWER SOURCES - A CONCEPT

OAKLEY, E. C. DATE- SEP. 1970

NPO-10734

Bolometer detector and bridge circuit measure the RF power. A varied bridge reference resistor achieves maximum power transfer allowing the output impedance of the RF source to be determined from the known circuit parameters.

B70-10220

ECONOMIC GAS CHROMATOGRAPH SYSTEM FOR

SUBAMBIENT PRESSURE GAS SAMPLING

MITCHELL, S. M. /N. AM. ROCKWELL CORP./ DATE-

JUL. 1970

M-FS-16298

Gas chromatograph sampling system consists of a manifold with a gas-sample valve, a minimum-volume pressure transducer with a portable monitor, a vacuum-source valve, and a sample inlet valve. Increased accuracy of analysis is obtained by better control of sample size.

B70-10234

BRUSHLESS DIRECT-CURRENT MOTORS

BAHM, E. DATE- SEP. 1970 REAN- SEE ALSO

NASA-CR-106071

NPO-11351

Survey results are presented on the use of unconventional motor windings and switching sequences to optimize performance of brushless dc motors. A motor was built, each coil terminal having a separate, accessible lead. With the shaft and all electronics excluded, length and outside diameter measured 1.25 and 0.75 in., respectively.

B70-10238

DESIGN PROCEDURE FOR IMPROVED ACTIVE FILTERS

GUSSOW, S. /SPERRY RAND CORP./ WEATHERS, G.

DATE- DEC. 1970

M-FS-20445

Synthesis technique for active filters gives high degree of accuracy for frequencies as high as 500 kHz and covers frequencies most used for telemetry. Frequency response can be realized within few percent of specified cutoff frequencies without need for tuning.

B70-10239

REGULATED-CURRENT DC POWER SUPPLY FOR

GASEOUS-DISCHARGE LAMPS

FREEMAN, W. HUGUENIN, D. DATE- SEP. 1970

GSFC-10293

Controlled current source having a high output resistance feeds continuous-flow hydrogen lamps in vacuum-ultraviolet photometric equipment. The power supply, also used with low-pressure sealed lamps, has a short recovery time and smooth regulation without overshoot.

B70-10242

BLOCK-CODED COMMUNICATIONS

LINDSEY, W. C. DATE- OCT. 1970 REAN- SEE ALSO

NASA-CR-105796

NPO-11397

Theory for block-coded telemetry systems is useful in testing performance of one- and two-way, phase-coherent telemetry systems when double-conversion, superheterodyne, phase-locked receiver, preceded by bandpass limiter is used to track carrier.

B70-10246

OXYGEN-HYDROGEN FUEL CELL WITH AN

IODINE-IODIDE CATHODE - A CONCEPT

JAVET, P. /PA. UNIV./ DATE- SEP. 1970

HQ-10379

Fuel cell uses a porous cathode through which is fed a solution of iodine in aqueous iodide solution, the anode is a hydrogen electrode. No activation polarization appears on the cathode because of the high exchange-current density of the iodine-iodide electrode.

B70-10263

A PROPOSED LASER MEASUREMENT SYSTEM FOR

DETERMINING SURFACE CONTOUR

NEUBERT, H. D. /GEN. DYN./ DATE- JUL. 1970

HQ-10326

Electro-optical system can scan a large /100 ft./ antenna in 30 seconds. Comparison of the reflected signal with a reference signal from a Pockel-cell modulator driver yields a signal that

02 ELECTRONIC/ELECTRICAL SYSTEMS

can be correlated with the distance covered by the laser. A scanning arrangement then enables contour measurement.

B70-10281

FORMULAS ESTABLISH AUDIO RANGE INDUCTANCE IN BERYLLIUM COILS

BALL, B. J. /MISS. STATE UNIV./ CATLEDGE, C. G.

WIER, D. D. DATE- JUL. 1970 REAN- SEE ALSO NASA-CR-77415

M-PS-14244

Mathematical modeling is used to determine the effects of resistance and capacitance upon the audio-inductance range of beryllium hammer coils and beryllium nylon-potted coils.

B70-10282

HIGH SPEED TELEVISION CAMERA SYSTEM PROCESSES PHOTOGRAPHIC FILM DATA FOR DIGITAL COMPUTER ANALYSIS

HABBAL, N. A. DATE- AUG. 1970

NPO-10745

Data acquisition system translates and processes graphical information recorded on high speed photographic film. It automatically scans the film and stores the information with a minimal use of the computer memory.

B70-10284

VERY HIGH FREQUENCY DIGITAL RANGING SYSTEM

SOBEL, S. E. /N. AM. ROCKWELL CORP./ DATE- SEP. 1970

MSC-15763

Digital ranging system measures slant range /from 500 feet to 200 nautical miles/ and provides digital range readout during range tracking between any two airborne vehicles.

B70-10290

SLIDE CHECKOUT CONSOLE

NIDES, A. S. /PHILCO-FORD CORP./ SWENINGSON, E. S. DATE- JUN. 1970

MSC-12318

Semiautomatic 35-mm photographic slide checkout console optically and electronically verifies registration of slides at a minimum rate of 250/hr. The console compares slide registration with a registration standard within the console. It verifies a binary code number on the bottom of the slide and visually displays its equivalent.

B70-10332

FLUERIC-CONTROLLER PNEUMATIC STEPPING MOTOR SYSTEM

DUSTIN, M. O. GRIFFIN, W. S. WALLHAGEN, R. E.

DATE- AUG. 1970 REAN- SEE ALSO NASA-TN-D-4495, NASA-TN-D-5155, NASA-TM-X-52250

LEWIS-11051

Nutating stepping motor consists of an output rotating gear and a nutating gear. A flueric logic circuit controls the nutating motor. The complete system constitutes a reliable, open loop actuator system with inherently high output stiffness, reasonable slewing speeds and small step size.

B70-10344

RADIOMETRIC EVALUATION OF ANTENNA-FEED COMPONENT LOSSES

OTOSHI, T. Y. STELZRIED, C. T. DATE- AUG. 1970

NPO-11238

Radiometric method accurately calibrates the principal line sections of an antenna, including the section which contains the antenna-feed component /mode generator and polarizer/. Precise knowledge of the absolute antenna temperature is not required.

B70-10346

ELECTRONICALLY CONTROLLED MOTOR DRIVE SYSTEM HAS ULTRA-HIGH RELIABILITY AND LONG LIFETIME

VEILLETTE, L. J. DATE- SEP. 1970

GSPC-10065

Direct drive electromechanical system is composed of brushless dc torque motor, offset-tooth magnetic sensor that derives position and rate information directly from output shaft, and rotary power transformer that transfers electrical power from external source to proper load. System has

high servo loop stiffness and minimum power consumption.

B70-10355

DIGITAL PHASE-MODULATION/MULTIPLEX SYSTEM

COUVILLON, L. A. DATE- SEP. 1970

NPO-11338

System combines and modulates subcarriers and pulse code modulation data entirely with digital logic, and phase modulates an RF carrier with a digital representation of the composite subcarrier signal. It permits programmed control and modification of the modulation indices.

B70-10377

PICOSECOND PULSE MEASUREMENT BY TWO-PHOTON EXCITATION OF PHOTOGRAPHIC FILM

BILLMAN, K. W. BURNHAM, D. C. DATE- SEP. 1970

ERC-10227

Technique shoots two broad light beams onto a photosensitive surface which responds nonlinearly to the intensity in the beams. The resultant signal contains a component depending on the intensity correlation function between the two light beams.

B70-10421

ARTIFICIAL-FEEDBACK SYSTEM

SUTTON, J. F. DATE- NOV. 1970

GSPC-10324

System suppresses spurious sinusoidal responses of any sinusoidally driven amplifier showing time-dependent phase shift versus frequency function. System is applicable to any sinusoidally driven amplifier. Technique eliminates, or reduces, unwanted spurious vibrations during tests to determine dynamic frequency responses of mechanical systems.

B70-10422

IMPROVED MANUAL RADIO FREQUENCY DIRECTION FINDER

GREENWOOD, T. L. DATE- SEP. 1970

M-PS-20507

Antenna loop direction finder, consisting of two separate loops mounted rigidly together at right angles to each other, requires single rotation for operation. The loops, one for bearing, the other for sensing, are rotated manually. Sensing loop, in conjunction with nondirectional antenna, produces signal with directional pattern.

B70-10434

SUPPRESSION OF ZINC DENDRITES IN ZINC ELECTRODE POWER CELLS

DANJANOVIC, A. /PA. UNIV./ DIGGLE, J. W. DATE-

DEC. 1970

HQ-10550

Addition of various tetraalkyl quarternary ammonium salts, to alkaline zincate electrolyte of cell, prevents formation of zinc dendrites during charging of zinc electrode. Electrode capacity is not impaired and elimination of dendrites prolongs cell life.

B70-10435

OPTIMAL ELECTRIC-DRIVE SYSTEM FOR VEHICLES

SAHINKAYA, Y. E. DATE- OCT. 1970

NPO-11210 NPO-11227

Pulse-width-modulated controller, for vehicle electrically driven by direct current from storage battery and requiring highest possible efficiency in battery use, varies electrical power through silicon controlled rectifiers for permanent magnet dc motors. System is not restricted to dc motors.

B70-10451

WIDE-RANGE TRACKING OSCILLATOR GENERATES

PHASE AND FREQUENCY COHERENT OUTPUT

HOWARD, J. R. /BOEING CO./ DATE- SEP. 1970

M-PS-14518

Tracking oscillator consists of modified phase-lock loop which controls voltage-controlled oscillator capable of automatic lock-on and track of periodic input waveform over frequency ratio 500-1. It is used in telemetry and communications systems where large signal fluctuations are encountered.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B70-10457

PHASE INTERPOLATION CIRCUITS USING
FREQUENCY MULTIPLICATION FOR PHASED ARRAYS
CARON, P. R. MAILLOUX, R. S. DATE- OCT. 1970
ERC-10285

Antenna phasing circuit is described with the following advantages - 1/ increased number of phased elements, 2/ current repetition for each array element, 3/ circuit simplicity, and 4/ accurate phase interpolation. This circuit functions with Huggins Scan or with nearly any other phasing system.

B70-10464

COLOR TELEVISION SYSTEM USING SINGLE GUN
COLOR CATHODE RAY TUBE
GAISER, E. E. HILBORN, E. H. DATE- OCT. 1970
ERC-10098

Two-primary color and single gun system provides quality differential color and variation in brightness for specific colors by varying current and controlling duty cycle of electron beam. Number of video amplifiers, deflection circuits, and guns required to display color TV picture is reduced and less complex tube is required.

B70-10478

INDUCTION GENERATOR PRODUCES
CONSTANT-FREQUENCY VOLTAGE FROM
VARIABLE-SPEED DRIVE
RIAZ, M. DATE- OCT. 1970
ERC-10065

Two-stage polyphase generator is usable as induction motor operable over range of speeds while powered from constant frequency source. It requires neither slip rings nor special adjustable-frequency power supplies or external reactive sources.

B70-10479

GROWING SINGLE CRYSTALS IN SILICA GEL
RUBIN, B. DATE- SEP. 1970
ERC-10306

Two types of chemical reactions for crystal growing are discussed. The first is a metathetical reaction to produce calcium tartrate tetrahydrate crystals, the second is a decomplexation reaction to produce cuprous chloride crystals.

B70-10480

THERMAL TUNING OF ORGANIC DYE LASERS
BILLMAN, K. W. BURNHAM, D. C. SCHAPPERT, G. T.
DATE- DEC. 1970
ERC-10187

Non-mechanical method for tuning liquid laser wavelengths involves electrically varying temperature of laser medium. Technique is used to investigate behavior of laser dyes, and may lead to broad, tunable, light source for spectroscopy measurements of long path absorption.

B70-10481

CONCEPT FOR A DISTRIBUTED PROCESSOR COMPUTER
BOGUE, P. N. /N. AM. ROCKWELL CORP./ BURNETT, G.
J. KOCZELA, L. J. DATE- DEC. 1970 REAN- SEE
ALSO NASA-CR-1446, NASA-CR-1158
ERC-10271

Future generation computer utilizes cell of single metal oxide semiconductor wafer containing general purpose processor section and small memory of approximately 512 words of 16 bits each. Cells are organized into groups and groups interconnected to form computer.

B70-10485

ELECTRONIC SCANNING OF 2-CHANNEL MONOPULSE
PATTERNS
SCHMIDT, R. P. DATE- NOV. 1970 REAN- SEE ALSO
NASA-TM-X-55580, NASA-TM-X-55938
GSPC-10299

Scanning method involves separation of scanning capability into two independent degrees of freedom. One degree of freedom corresponds to azimuthal scanning and other to elevation scanning on spiral coordinate axes. Scanning of both prime-feed and mirrored patterns is accomplished with reduction of mechanical vibration damage to large antennas.

B70-10487

QUICK CALCULATION METHOD FOR FLUID FLOW
THROUGH DUCT SYSTEMS
SCOTT, L. R., JR. /BOEING CO./ DATE- DEC. 1970
M-FS-15069

Conditions for subsonic compressible flow through duct systems are quickly and easily calculated using compact series of curves showing dimensionless parametric functions of Mach number and specific heat ratio. Method is directly applicable to analysis and design of compressible flow systems in industrial fields or processes.

B70-10507

LASER WAVELENGTH SELECTOR AND OUTPUT COUPLER
HARD, T. M. DATE- DEC. 1970
ERC-10248

Optical system eliminates displacement occurring when wavelengths are selected in multiple wavelength laser utilizing intracavity wavelength selection by first-order Littrow reflection of plane grating. Output coupling varies direction of output beam as different wavelengths are selected by grating rotation.

B70-10518

DIGITAL DEMODULATION WITH DATA SUBCARRIER
TRACKING
SANGER, D. K. DATE- NOV. 1970 REAN- SEE ALSO
NASA-CR-73514
NPO-10858

Digital demodulator is based on early-late bit timing scheme coupled with Costas data tracking loop. System is successful in enhancement of weak signals from space where atmospheric and other interference media cause bit error rate to reach excessive level.

B70-10519

A RADIOMETRIC METHOD FOR MEASURING THE
INSERTION LOSS OF RADOME MATERIALS
SEIDEL, B. L. STELZRIED, C. T. DATE- NOV. 1970
NPO-11423

Radiometer system measures effective noise temperature directed towards sky, with and without radome over antenna horn. Data is then translated into computer format. With additional transmission line insertion loss data from other measurements, computer calculates insertion loss of radome material.

B70-10522

FAIL-SAFE NUMERICAL CONTROL
THOMPSON, G. A. /N. AM. ROCKWELL CORP./ DATE-
NOV. 1970
M-FS-12613

System provides duplicate set of control logic circuitry. Comparators insure that the same data is present in both circuits. If any discrepancy is found, the machine is automatically stopped, before damage can occur.

B70-10538

LIGHTWEIGHT S-BAND HELIX ANTENNA
CRIBB, H. E. DATE- NOV. 1970
KSC-10392

Pyrotechnically operated S-band helical antenna is developed in which helix is deployed subsequent to antenna placement. Antenna is small, lightweight, and novel in that deployable helix is used in place of fixed dish or horn. It can be designed to cover L- and X-band frequencies.

B70-10554

DESIGN AND EVALUATION OF BRUSHLESS ELECTRICAL
GENERATORS
COLLINS, F. A. /LEAR SIEGLER INC./ ELLIS, J. N.
DATE- OCT. 1970 REAN- SEE ALSO NASA-CR-54320,
N65-29717, N65-30693, N65-30694, N65-30695,
N65-30696
LEWIS-10124

Ten design manuals assembled and nine computer programs are developed for evaluation of proposed designs of brushless rotating electrical generators. Design manual package provides all information required for generator design, and computer programs permit calculation of performance of specific designs including effects of materials.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B70-10572

SPECTRAL ANALYSIS OF OSCILLATION
INSTABILITIES IN FREQUENCY STANDARDS
LIPPINCOTT, S. /ADCOM RES. AND DEVELOP./ DATE-
NOV. 1970
M-FS-20778

Phase and frequency fluctuations, inherent in oscillators used as frequency standards, are measured over spectral frequency range of 1 Hz to 5 kHz. Basic measurement system consists of electromechanical phase-locked loop that extracts phase and frequency fluctuations and error multiplier that extends threshold sensitivity.

B70-10590

DIGITAL-VOLTAGE CURVE GENERATOR
PERLMAN, M. DATE- NOV. 1970
NPO-11104

Curve generator capable of producing precisely repeatable curve for any single-valued function of voltage versus time uses digital approach, implemented by means of clocked feedback shift register, large scale integrated circuit diode matrix comprising about 12,000 diodes, counter, and digital-to-analog converter.

B70-10616

SYSTEM AUTOMATICALLY TUNES HYDROGEN MASERS
LEVINE, M. W. /HEWLETT-PACKARD CO./ VESSOT, R.
F. C. DATE- NOV. 1970 REAN- SEE ALSO
NASA-CR-94937
HQ-10502

Automatic tuning system permits frequency synchronization between two hydrogen masers. System matches spaceborne clock performance with that of ground-based clock to test red shift theory. This system, used in conjunction with radio astronomy for long-baseline interferometer experiments, serves as a tool for investigation of distant universe phenomena.

B70-10617

SWEPT-FREQUENCY UHF RADIOMETER FOR DEEP
PROBES OF EARTH - A CONCEPT
KOPPEL, W. /MARTIN MARIETTA CORP./ DATE- DEC.
1970
MSC-13428

Radiometer, developed for use on moon or planets, could be used to - determine layering and structure as deep as 100 feet below earth surface, determine physical properties of subsurface by variation of dielectric constants, identify types of materials including ore bodies and oil, and locate subsurface deposits of moisture.

B70-10633

A NEW SOLID-STATE LOGARITHMIC RADIOMETER
BURROUS, C. N. DEBOO, G. J. PAGE, W. A.
WHITING, E. E. DATE- DEC. 1970
ARC-10287

Combination of temperature-compensated logarithmic amplifiers and p-i-n photodiodes operating in zero-bias mode provides lightweight radiometer for detecting spectral intensities encompassing more than three decades over a range of at least 300 to 800 nanometers at low power levels.

B70-10638

INTRUDER DETECTION SYSTEM
LEE, R. D. DATE- NOV. 1970
ARC-10097

Moving coil geophones are utilized to develop a small, rugged, battery operated system capable of detecting seismic disturbances caused by intruders. Seismic disturbances sensed by each geophone are converted into electrical signals, amplified, and transmitted to remote receiver which provides listener with aural signal.

B70-10639

INTEGRATOR FOR ON-LINE MEASUREMENT OF BUFFET
SIGNALS
BATTS, C. N. DATE- DEC. 1970
LANGLEY-10627

Device determines average rms value of buffet signals by integrating rms signals from strain gages for preselected period of time. System measures average rms value of other transient data, and the upper frequency limit depends on the frequency response of the amplifiers.

B70-10641

TRAVELING-WAVE PHOTODETECTOR HAS
SUB-NAVOSECOND RESPONSE
SUN, C. /RCA/ WALSH, T. E. DATE- DEC. 1970
GSFC-10831

Mercury-doped germanium photodetector uses waveguide which increases the absorption of microwave energy within the photodetectors. Waveguide and photodetector are placed in liquid helium Dewar and cooled. A carbon dioxide laser is light source and klystron provides microwave energy. Measured response times are approximately 1 nanosecond.

B70-10662

WATER VELOCITY METER
ROBERTS, C. W. SMITH, D. L. DATE- DEC. 1970
LANGLEY-10619

Simple, inexpensive drag sphere velocity meter with a zero to 6 ft/sec range measures steady-state flow. When combined with appropriate data acquisition system, it is suited to applications where large numbers of simultaneous measurements are needed for current mapping or velocity profile determination.

B70-10664

RC FILTER WITH LOW DISTRIBUTED CAPACITANCE
PROVIDES 60 DB ISOLATION AT 500 MHZ
CESSNA, J. R. /IOWA UNIV./ DATE- DEC. 1970
GSFC-10983

Resistance-capacitance RC filter coupled to a high input impedance receiver preamplifier provides signal isolation from an RF transmitter. High isolation is achieved by minimizing the inductive impedance to ground and using the distributed capacitance of the filter components.

B70-10691

BRUSHLESS DIRECT-CURRENT MOTOR WITH
STATIONARY ARMATURE AND FIELD
STUDER, P. DATE- DEC. 1970
XGS-05290

Electronically commutated dc motor has an active fixed field winding, and active fixed armature winding, and passive rotor. By use of brushless dc motor switching technique, motor provides continuous controllable and reversible torque without use of sliding contacts.

B70-10716

ELECTRONIC STRAIN-LEVEL COUNTER
PITTS, F. L. SPENCER, J. L. DATE- DEC. 1970
LANGLEY-10756

Counter for aircraft counts and records number of times the strain at a point in a structural member exceeds each of four preset levels. Counter uses 28 volt dc power supply, metallic resistance strain gage bridge as sensor, integrated and solid state circuits for signal processing, and electromechanical counters for data storage and readout.

B70-10718

DEVELOPMENT OF A SILVER-ZINC BATTERY SYSTEM
MOSES, A. J. /HUGHES AIRCRAFT CO./ UCHIYAMA, A.
A. DATE- DEC. 1970 REAN- SEE ALSO
NASA-CR-108207
NPO-11444

Summary report is described of historical documentation and detailed design data for development of silver-zinc battery for use on Surveyor spacecraft. Electrical and physical characteristics of battery models are included, along with data on qualification, acceptance, solar-thermal-vacuum, mission simulation testing, and actual flight performance.

B71-10001

DIAGNOSTIC CAPABILITY ADDED TO DIGITAL EVENTS
EVALUATOR
FRASKETTI, A. S./BOEING CO./ HANSON, G. E.
JAN. 1971
KSC-10526

Digital events evaluator reviews events preceding system malfunction and automatically prints out most probable cause of problem. Analysis is performed by comparing input data with nominal values stored in tables. Each table has

02 ELECTRONIC/ELECTRICAL SYSTEMS

associated system mask to restrict comparison to preselected critical parameters within a given system.

B71-10019

THERMAL AND STRUCTURAL MODELING OF SUPERINSULATION
MARSHALL, K. N./LOCKHEED MISSILES AND SPACE CO./

MURRAY, D. O. ROLLING, R. E.

JAN. 1971 SEE ALSO NASA-CR-98241

M-PS-20324

Model permits direct physical measurement of the thermal response of critical components of space telescopes, thus providing flexibility for systems studies and design changes.

B71-10049

HIGH-SPEED DIGITAL PLOTTER

GRAY, J., JR.

MAR. 1971

ARG-90001

Modified typewriter mechanism with standard logic components provides digital plot of output of multichannel analyzer. Unit plots irregular curves at approximately 14 channels per second, and smooth curves at over 25 channels per second, and is not subject to analog error or drift.

B71-10056

DUAL-FREQUENCY FEED-HORN ANTENNA

SCHUCHARDT, J. M./MARTIN MARIETTA CORP./

MAR. 1971

GSFC-10820

Antenna with novel two-port diplexer separates high power /31.65 GHz/ transmitted signal from low power /15.2 GHz/ received signal. Two-port network feeds dual-frequency horn and excites antenna with minimal loss in power. Isolation between transmit port and receive port ranges from 60 db to 80 db.

B71-10057

ECONOMICAL PHASED-ARRAY ANTENNA FOR ENVIRONMENTAL APPLICATIONS

HIGGINS, W. T./MIT/

MAR. 1971 SEE ALSO NASA-CR-101683

HQ-10434

Antenna system handles data acquisition and tracking, functions as a sensitive radio telescope, and serves as a radiometer in earth atmosphere investigations. Antenna's sensitivity permits resolution of solar disk quadrants in Doppler radar observations. Antenna also serves as a planetary radar device and link to commercial aircraft.

B71-10064

MINIATURE FUEL CELLS RELIEVE GAS PRESSURE IN SEALED BATTERIES

FRANK, H. A./DOUGLAS AIRCRAFT CO./

APR. 1971 SEE ALSO NASA-CR-80339

IGS-11370

Miniature fuel cells within sealed silver zinc batteries consume evolved hydrogen and oxygen rapidly, preventing pressure rupturing. They do not significantly increase battery weight and they operate in all battery life phases. Complete gas pressure control requires two fuel cells during all phases of operation of silver zinc batteries.

B71-10082

DIGITAL TELEMETRY SYSTEM ELIMINATES DATA REDUNDANCY

HYMER, R. L.

MAY 1971

MSC-12388

Floating aperture, zero-order predictor /ZOP/ circuit eliminates telemetered data redundancy by examining data from each sensor before it is multiplexed and transmitted. Digital devices to implement design are off-the-shelf items such as gates, registers and flip-flops, which are readily amenable to large-scale integration techniques.

B71-10087

PERFORMANCE EVALUATION SYSTEM FOR INERTIAL NAVIGATION EQUIPMENT

MC KERN, R. A./MIT/

APR. 1971

MSC-13542

Testing system studies inertial characteristics of gyroscopic devices. System consisting of

instrument support package, dynamic test table, torque control electronics, and real-time computer evaluates performance of prototype gyroscopic strapdown units in inertial-grade attitude-reference systems. System is applicable to commercial aircraft.

B71-10090

POLAROGRAPHIC CARBON DIOXIDE TRANSDUCER AMPLIFIER

STILLMAN, G./BECKMAN INSTR., INC./

APR. 1971

MSC-13728

Electronic amplifier contains matched pair of metal oxide semiconductor field effect transistor devices which have high input impedance and long-term stability. Thermistor in feedback loop provides temperature compensation for large drifts in the sensor.

B71-10091

ELECTRONIC DEVICE INCREASES THRESHOLD SENSITIVITY AND

REMOVES NOISE FROM FM COMMUNICATIONS RECEIVER

CONRAD, W. M./PHILCO-FORD CORP./ LOCH, P. J.

MAY 1971

MSC-12165

Threshold extension device connected between demodulator output and filter output minimizes clicking noise. Device consists of click-eliminating signal transfer channel with follow-and-hold circuit and detector for sensing click impulses. Final output consists of signal plus low level noise without high amplitude impulses.

B71-10119

STABILIZATION OF INTERFEROMETER FRINGE PATTERNS

BROWN, R. M.

MAY 1971

ARC-10392

Fringe pattern motion is compensated by closed-loop servo system that adjusts a mirror mounted on piezoelectric crystal, so that path difference in interferometer is maintained at constant values at one point in the field. System is applicable to holography with continuous wave laser sources.

B71-10126

PORTABLE LOW-FREQUENCY VIBRATION MEASURING AND RECORDING SYSTEM

CLEVENSON, S. A. DIBBLE, A. C.

MAY 1971

LANGLEY-10543

Information gathering system measures and records vibrations which affect personnel comfort in space, air, and surface vehicles. Three vibration transducers with mutually perpendicular axes control the frequency output of voltage controlled oscillators /VCO/. Outputs of VCO'S are multiplexed and then recorded on one track of stereo tape recorder.

B71-10141

NEW FILTER TECHNIQUE IMPROVES HOME TELEVISION RECEPTION

DEVELET, J. A., JR./TRW SYSTEMS GROUP/ HUANG, M. Y.

STUBER, F. M.

MAY 1971 SEE ALSO NASA-CR-108506

MSC-13729

Program studies and designs combine filters and analyzes their effectiveness in improving TV quality. Signal tracking methods are improved. Combine phase-lock loop provides significant sensitivity improvement above and below threshold.

B71-10148

ISOLATED-LINE COMMUTATOR-AMPLIFIER

PARNSWORTH, D. L./WESTINGHOUSE ELEC. CORP./

JUN. 1971

M-PS-20734

Commutator device combines several individual signal-input lines into single output line. Its desirable characteristics are - low input impedances, high output impedance, very high forward-to-reverse transmission ratios, and minimal gating spike coupling to either the inputs or the output.

B71-10164

A TOPOLOGICAL APPROACH TO COMPUTER-AIDED SENSITIVITY ANALYSIS

02 ELECTRONIC/ELECTRICAL SYSTEMS

CHAN, S. P. MUNOZ, R. M.
JUN. 1971
ARC-10214

Sensitivities of any arbitrary system are calculated using general purpose digital computer with available software packages for transfer function analysis. Sensitivity shows how element variation within system affects system performance. Signal flow graph illustrates topological system behavior and relationship among parameters in system.

B71-10169
A FREQUENCY DIVISION MULTIPLEX TECHNIQUE FOR TRANSMITTING COMMANDS
BREY, H./SPERRY RAND CORP./
JUN. 1971
KSC-10521

Reliable random access multiplexer is controlled and operated over two twisted-pair telephone lines at distances of 5.6 to 8.0 km with control signals of less than 10 volts rms. Technique adapts to any process or environmental control system where data source is necessary.

B71-10176
IMPROVED REVERSIBLE COULOMETER CELL
BOETTCHER, G. E.
JUN. 1971
SAN-10051

Cell operates either as timer or current-time integrating device in any physical orientation with better than 2 percent accuracy over temperature range of 283 K to 398 K, with input current range from few microamperes to approximately 1000 microamperes over time period of 1 sec to several hours.

B71-10205
STANDARDIZED PEARSON TYPE 3 DENSITY FUNCTION AREA TABLES
COHEN, A. C./GA. UNIV./ HELM, F. R. SUGG, M.
JUL. 1971 SEE ALSO NASA-CR-61266
M-FS-20541

Tables constituting extension of similar tables published in 1936 are presented in report form. Single and triple parameter gamma functions are discussed. Report tables should interest persons concerned with development and use of numerical analysis and evaluation methods.

B71-10213
AIRCRAFT-CRASH-LOCATING TRANSMITTER FEATURES DESIGN IMPROVEMENTS
MANOLI, R./N. AM. ROCKWELL CORP./ ULRICH, B. R.
JUL. 1971
M-FS-16609

Crash locator is automatically ejected from aircraft at time of crash and begins transmitting at emergency radio frequencies monitored by all airports and airport control towers. Advantages are smaller size, simpler design and installation, extended transmitting range and life, greater deployment reliability and increased crash resistance.

B71-10218
EFFICIENT DIGITAL COMPARISON TECHNIQUE FOR LOGIC CIRCUITS
MC CARTHY, C. E./IBM FEDERAL SYSTEMS DIV./
JUL. 1971
M-FS-21080

Tolerance compare technique indicates discompare only when numerical difference value exceeds prescribed limit. Algorithm involving binary number properties is defined, in lieu of arithmetic operation which requires relatively complex circuitry. Extension of algorithm may be made to encompass tolerances other than one unit.

B71-10220
A PSEUDO RANDOM-ACCESS SYNCHRONOUS METEOROLOGICAL SATELLITE SYSTEM
DARCEY, R. J. MARTEL, R. J./WESTINGHOUSE ELEC. CORP./
JUL. 1971
GSFC-10895

Communications satellite system uses pseudo-random time frequency multiplexing technique for extracting real-time meteorological data from great number of isolated weather stations /data

collection platforms/ situated randomly throughout the world.

B71-10223
SOLAR CELL POWER SCANNER
EVANS, J. C., JR.
JUL. 1971
LEWIS-11280

System locates high- and low-output regions in cadmium sulfide thin film photovoltaic cells. High resolution photograph shows conversion efficiency of each scanned area. X-Y recorder fed by amplified signal from solar cell also produces power contour map. Photo and map reveal high- and low-conversion-efficiency regions.

B71-10224
ATMOSPHERIC POLLUTION MEASUREMENT BY OPTICAL CROSS CORRELATION METHODS - A CONCEPT
FISHER, M. J. KRAUSE, F. R.
JUL. 1971 SEE ALSO B67-10030
M-FS-12078

Method combines standard spectroscopy with statistical cross correlation analysis of two narrow light beams for remote sensing to detect foreign matter of given particulate size and consistency. Method is applicable in studies of generation and motion of clouds, nuclear debris, ozone, and radiation belts.

B71-10226
MULTILAYERED PRINTED CIRCUIT BOARDS INSPECTED BY X-RAY LAMINOGRAPHY
ARNESON, B. E. /IIT RES. INST./ BENNETT, H. F. GREGG, P. C. HAGEDORN, R. H. KASPARAS, R. MOLER, R. B. PAPE, R. C. RILEY, D. L.
JUL. 1971 SEE ALSO NASA-CR-98249
M-FS-20849

Technique produces high resolution cross-sectional radiographs with close interplane spacing for inspecting multilayer boards to be used in providing circuitry routing and module structural support.

B71-10228
MULTICHANNEL INTERCOM WITH SIMULTANEOUS SEND/RECEIVE CAPABILITY
BUROWICK, E. A./N. AM. ROCKWELL CORP./
JUL. 1971
M-FS-18808

System, using only one amplifier and operating multiple inputs, eliminates push-to-talk requirement of previous systems and inhibits acoustical feedback by using microphones and headphones.

B71-10230
CONSTANT-AMPLITUDE, FREQUENCY-INDEPENDENT PHASE SHIFTER
DEBOO, G. J.
JUL. 1971
ARC-10269

Electronic circuit using operational amplifiers provides output with constant phase shift amplitude, with respect to sinusoidal input, over wide range of frequencies. New circuit includes field effect transistor, Q, operational amplifiers, A1 and A2, and phase detector.

B71-10246
PORTABLE CIRCUIT-INTERRUPTION INDICATOR
BEZANT, K. R./TWA/
JUL. 1971
KSC-10546

Device locates transient power interruptions occurring in electrical equipment. Indicator operates on principle that circuit in normal use retains residual current in the line prior to an interruption.

B71-10251
VARIABLE SWEEP-RATE SHORTENS DYNAMIC TESTING TIME
LORENZO, C. F.
JUL. 1971 SEE ALSO NASA-TN-D-7022
LEWIS-11238

Method adjusts sweep frequency of tested system such that sweep is nominal when selected dynamic event occurs, but is rapid otherwise. Technique achieves time reductions of 7.5 to 1, maintains

02 ELECTRONIC/ELECTRICAL SYSTEMS

0.5 percent accuracy in the results, and has several industrial applications.

B71-10258
STUDY OF NONDESTRUCTIVE TECHNIQUES FOR REDUNDANCY VERIFICATION
INNOVATOR NOT GIVEN /RADIATION INC./ JUL. 1971 SEE ALSO NASA-CR-111765
KSC-10661

Redundant functional element, together with basic elements of system, constitutes a redundant system with primary and backup capability for performing particular functions with increased reliability. Methodology is applicable to design of a verification system for hypothetical complex communication system.

B71-10263
MAN-MACHINE COMMUNICATION - A TRANSPARENT SWITCHBOARD FOR COMPUTERS
RASHUSSEN, H./MIT/
JUL. 1971
MSC-13746

Device uses pattern of transparent contact touch points that are put on cathode ray tube screen. Touch point system compels more precise and unambiguous communication between man and machine than is possible with any other means, and speeds up operation responses.

B71-10276
A REAL-TIME STATISTICAL TIME-SERIES ANALYZER
STEWART, C. H.
AUG. 1971
MSC-12428
Device extracts average frequency of human speech and produces second, third, and fourth moments of instantaneous frequency about this average. It operates on electrical time representation of input signal, performs statistical analysis on zero-crossing of almost any signal, and does not require specialized personnel to operate it.

B71-10282
ENVIRONMENTAL EFFECTS ON SILICON SOLAR CELLS
BERMAN, P. MOSS, R.
AUG. 1971 SEE ALSO NASA-CR-99338
NPO-11475

Test results indicate that solder coating cells produces protective or deleterious effect, depending on the environment. Major problem for solder coated cells is in control of solder thickness and uniformity. Problem area for non-solder coated cells is not identified.

B71-10288
AUTOMATIC TRANSMISSION LINE MONITOR
PARSONS, W. E. RICHARDS, L. O.
AUG. 1971
KSC-10385

Monitor improves complex network reliability in computer data links and command transmission lines. System evaluates circuit performance against preselected criteria, identifies and stores data indicating out-of-tolerance conditions, conducts closed loop testing, and provides for operation under command of digital computer that determines restoration priorities.

B71-10298
PRECISION CALIBRATION AND REFERENCE VOLTAGE SOURCE FOR DATA ACQUISITION SYSTEMS
INNOVATOR NOT GIVEN /GEN. INSTR. CORP./ AUG. 1971
M-PS-20950

Hybrid integrated circuit operational amplifiers, which have inherent characteristics of low quiescent power dissipation and extended operational lifetime with high reliability, are source for digital systems. Amplifiers are coupled to Zener reference diode in current control and buffer configuration.

B71-10299
DATA SAMPLING SYSTEM FOR MONITOR AND CONTROL STATION
INNOVATOR NOT GIVEN /GEN. INSTR. CORP./ AUG. 1971
M-PS-20948
System design is based on development of standardized, interchangeable modules that minimize power dissipation, interconnecting cables and size. Maximum flexibility is achieved

by using building block approach where all data modules are identical and are connected at any remote location and addressed in random fashion from central unit.

B71-10307
TONE-ACTIVATED, REMOTE, ALERT COMMUNICATION SYSTEM
BAKER, C. D. COUVILLON, L. A. HUBBARD, W. P. KOLLAR, F. J. POSTAL, R. B. TEGNELIA, C. R.
AUG. 1971
NPO-11132

Pocket sized transmitter, frequency modulated by crystal derived tones, with integral loop antenna provides police with easy operating alert signal communicator which uses patrol car radio to relay signal. Communication channels are time shared by several patrol units.

B71-10318
MULTIFUNCTION AUDIO DIGITIZER FOR COMMUNICATIONS SYSTEMS
MONFORD, L. G., JR.
AUG. 1971
MSC-13855

Digitizer accomplishes both N bit pulse code modulation /PCM/ and delta modulation, and provides modulation indicating variable signal gain and variable sidetone. Other features include - low package count, variable clock rate to optimize bandwidth, and easily expanded PCM output.

B71-10324
SEL-SYNCHRONIZING, BI-ORTHOGONAL CODED PCM TELEMETRY SYSTEM
MILLER, W. MULLER, R. TAYLOR, T. YAGELOWICH, J.
AUG. 1971 SEE ALSO NASA-TR-R-292
GSSC-11237

Communications and data handling system improves signal to noise ratio when transmission channel is perturbed by noise. Telemetry system consists of airborne source, Gaussian additive noise channel, and ground receiver unit. Advantages of system are given.

B71-10325
MULTISPECTRAL INFRARED IMAGING INTERFEROMETER
POTTER, A. E., JR.
AUG. 1971
MSC-12404

Device permitting simultaneous viewing of infrared images at different wavelengths consists of imaging lens, Michelson interferometer, array of infrared detectors, data processing equipment for Fourier transformation of detector signal, and image display unit. Invention is useful in earth resources applications, nondestructive testing, and medical diagnoses.

B71-10326
PHASE LOCKING OF FIELD SEQUENTIAL COLOR WHEEL FOR SMALL TV CAMERA
NIENYER, L. L./WESTINGHOUSE ELEC. CORP./
AUG. 1971
MSC-13857

System employs synchronous motor driven by deflection waveform of TV and connected directly to color filter wheel to phase lock wheel to deflection unit. Innovation stabilizes color response of small TV cameras and allows for small, lightweight installations. Problems associated with motor phase changes are cited.

B71-10344
COMMUNICATIONS SYSTEM FOR ZERO-G SIMULATION TESTS IN WATER
SMITH, H. E.
SEP. 1971
M-PS-21357

System connects seven observers, diver, and spare station, and utilizes public address system with underwater speakers to provide two-way communications between test subject and personnel in control of life support, so that test personnel are warned immediately of malfunction in pressure suit or equipment.

B71-10360
LASER NET - A CONCEPT FOR MONITORING WINGTIP VORTICES
ON RUNWAYS
FUNK, B. H. JOHNSTON, K. D.
SEP. 1971 SEE ALSO NASA-TM-X-64525
M-FS-20857

Network of laser beams passes over runway to photodetectors on opposite side, magnitude of beam deflection indicates magnitude of density gradient encountered. Visual display of beam deflections affects go, no-go decision for takeoff and landing.

B71-10366
SOLID-STATE DATA INTERPRETATION SYSTEM - A CONCEPT
HAGENAU, K./BOEING CO./ PINSON, G. T.
SEP. 1971
M-FS-20587

Device, serving as substitute for cathode ray tubes, applies to computer input-output devices such as microfilm readers, data displays, and optical scanners. Each device operates at speed of modern computer.

B71-10370
IMPROVED CIRCUIT AVOIDS PREMATURE POWER TRANSISTOR
FAILURE
MC LYMAN, W. T.
OCT. 1971
NPO-11365

Reactor inserted in the base-drive circuit of each power transistor delays the turn-on of one transistor until the other has turned off.

B71-10371
HIGH EFFICIENCY TELEMETRY METHOD
LIM, L. Y.
OCT. 1971
NPO-10388

Analog and digital mechanizations contain new combinations of known circuits that generate coefficients of Fourier series terms in accordance with harmonic content of waveform to be transmitted. Technique represents information signal more accurately than previous methods and requires fewer information bits.

B71-10391
TELEVISION MULTIPLEXING SYSTEM
SIMPKINS, L. G.
OCT. 1971
KSC-10654

System with single, standard, wideband line transmits ten or more real time TV video data displays over hard wire to recorders more than 22.5 km from source. Digital logic and integrated circuits ensure high reliability and low maintenance. System is adaptable for video sampling applications.

B71-10404
APPLICATION OF CALIBRATION MASKS TO TV VIDICON TUBE
BRAWNER, E. L./BENDIX CORP./ BROWN, J. J. JONKER, W. J.
OCT. 1971
KSC-10589

Photographic application method devised for overlaying test pattern masks on TV camera vidicon tubes prints the mask within 0.0076 cm of the vertical and horizontal center lines of the tube face. Entire process, including mask fabrication and alignment procedure, requires less than 10 minutes.

B71-10408
PRINCIPLES OF ERROR DETECTION AND ERROR CORRECTION
CODES
PERLMAN, M.
NOV. 1971
NPO-11487

Report is reviewed which considers theoretical basis of groups, rings, fields, and vector spaces, and their relationship to algebraic coding theory. Report serves as summary for engineers and scientists involved in data handling and processing systems.

B71-10410
COMPOSITE ANTENNA FEED SYSTEM OPERATES FROM VHF TO
X-BAND
JAKSTYS, V./PHILCO-FORD CORP./

NOV. 1971
GSFC-11046

System has high radiation efficiency and minimal interaction between elements when inserted between a multimode, multifrequency transponder and a parabolic reflector in an airborne communications system.

B71-10439
A MULTIPLE-PLATE, MULTIPLE-PINHOLE CAMERA FOR X-RAY
GAMMA-RAY IMAGING
HOOVER, R. B.
NOV. 1971
M-FS-20546

Plates with identical patterns of precisely aligned pinholes constitute lens system which, when rotated about optical axis, produces continuous high resolution image of small energy X-ray or gamma ray source. Camera has applications in radiation treatment and nuclear medicine.

B71-10440
DIGITAL ASPECT CLOCK
BARTLEY, W. C./SOUTHWEST CENTER FOR ADVANCED STUDIES/
NOV. 1971
ARC-10088

Digital clock precisely set and reset by pulses from a solar sensor, combined with a logic system, provides accurate time-sector division of spin-stabilized satellite. Integral times for viewing physical phenomena from various directions are equal and mean angles of viewing can be determined.

B71-10444
BEAM SQUINT CORRECTION FOR A DIPLEX, RETRODIRECTIVE
PHASED ARRAY
BARITT, P. SATRE, W./CUTLER-HAMMER, INC./ SIELMAN, P.
DEC. 1971
GSFC-11023

Beam squint is eliminated by using received phase at each array element to control transmitted phase at another element. Correction method may extend to multi-element array by using ring structure.

B71-10445
PLANET GEOMETRIC CENTER TRACKER
FLEENOR, E. G./LOCKHEED MISSILES AND SPACE CO./
DEC. 1971 SEE ALSO NASA-CR-73162, NASA-CR-73163
ARC-10084

Tracker has angular accuracy on order of one arc-second. Device locates planet centers even when they appear gibbous or crescent. Automatic operation without requirement for planet size input is achieved by incorporating planet radius seeking circuit.

B71-10451
THEORY AND APPLICATION OF FEEDBACK SHIFT REGISTERS
PERLMAN, M.
NOV. 1971
NPO-11486

Document summarizes state-of-the-art in data processing techniques on-board spacecraft, and serves as an aid for personnel requiring tutorial knowledge of ultrareliable data processing techniques.

B71-10502
STATISTICAL MEASUREMENTS OF THE ZERO-CROSSING TIME OF
A NOISY SINEWAVE
COST, S. T./IBM/
DEC. 1971
GSFC-11004

Standard deviation of difference in zero crossing times of two identical sinewaves distorted by narrowband noise behaves similarly to average value of error, but deviation is approximately one order of magnitude larger.

B71-10504
VOTER COMPARATOR SWITCH PROVIDES FAIL-SAFE DATA
COMMUNICATIONS SYSTEM - A CONCEPT
KOCZELA, L. J./N. AM. ROCKWELL CORP./ WILGUS, D. S.
DEC. 1971
MSC-13932

System indicates status of computers and controls operational modes. Two matrices are used - one relating to permissible system states, the other

02 ELECTRONIC/ELECTRICAL SYSTEMS

relating to requested system states. Concept is useful to designers of digital data transmission systems and time shared computer systems.

B71-10517
PROGRAMMED MULTIPLEXING SYSTEM SIMULTANEOUSLY MONITORS SEVERAL VOLTAGES
WRIGHT, L. S./N. AM. ROCKWELL CORP./
DEC. 1971
MSC-17139

System consists of digital voltmeter with binary coded decimal output, programmer, multiplexer, and two to six gated digital displays. Maximum number of circuits monitored is determined by digital voltmeter, rate of change of parameter being measured and complexity of multiplexer design.

B71-10530
BRUSHLESS DC MOTOR WITH DUAL WINDINGS
AUCLAIR, G. F./GE/ HERTZENDORF, B. H. MANTZUFFEL, E. W.
DEC. 1971 SEE ALSO NASA-CR-102675
M-PS-21290

Motor has high starting torque and high running speeds. Control system consists of Hall effect generator/resolver and associated electronic amplifiers and switches. Motor operation is described.

B72-10018
A HYBRID ELECTROMECHANICAL SOLID STATE SWITCH FOR ac POWER CONTROL
Innovator not given (Teledyne Kinet.) 1972 See also B67-10165
MSC-14005

Bidirectional thyristor coupled to a series of actuator driven electromechanical contacts generates hybrid electromechanical solid state switch for ac power control. Device is useful in power control applications where zero crossover switching is required.

B72-10030
THIRD ORDER DIGITAL-TO-ANALOG CONVERTER
W. P. Dotson
1972
MSC-12458

System, consisting of sample and hold digital-to-analog converter, clock circuit, sample delay circuit, initial condition circuit and interpolator circuit, improves accuracy of reconstructed analog signal without increasing sample rates.

B72-10050
ELECTRODES FOR SEALED SECONDARY BATTERIES
D. B. Boies (IIT Res. Inst.) and F. T. Child (IIT Res. Inst.)
1972

ARC-10238
Self-supporting membrane electrode structures, in which active ingredients and graphite are incorporated in a polymeric matrix, improve performance of electrodes in miniature, sealed, alkaline storage batteries.

B72-10051
IMPROVED DEVICE MEASURES PERFORMANCE OF BATTERIES UNDER LOAD
J. D. Powell (TRW, Inc.)
1972

ARC-10252
Kordes-Marko interrupter bridge circuit includes capability of varying frequency of interruption in steps from 60 Hz to 2000 Hz range extension, and addition of operating modes to allow instrument to serve as steady dc constant-current source or load, or source of interrupted constant current.

B72-10052
ADAPTIVE POSITION CONTROL LOOP
W. L. Keltz (GE)
1972 See also NASA-CR-73304
ARC-10255

Design of attitude control system for a sounding rocket is established by using a control loop which incorporates a lead network to convert position output into a feedback signal that is approximately proportional to position, plus a constant times rate.

B72-10074
OXYGEN PRESSURE CONTROL FOR ELECTROLYSIS CELLS
J. D. Powell (TRW, Inc.)
1972

ARC-10250
Duty cycle of switched, constant current circuit controlled by pressure sensor provides oxygen at a constant pressure from a cell which electrolyzes water, eliminating possibility of cell damage by excessive oxygen demand.

B72-10076
QUICK RELEASE ACOUSTIC SENSOR HOLDING FIXTURE
W. McMahon (N. Am. Rockwell Corp.) and E. S. Scherba (N. Am. Rockwell Corp.)
1972
MSC-17457

Quick-release spring holder secures acoustic sensor to test material surface eliminating adhesive bonding to test material and achieving acoustic emission evaluation from tensile tests. Reusability of sensors reduces test cost.

B72-10086
INTRODUCTION OF LITHIUM INTO THE FRONT SURFACE OF SOLAR CELLS
P. A. Iles (Globe-Union, Inc.)
1972

NPO-11404
Time-temperature cycle provides sufficient lithium in the active regions of solar cells. Gradient of lithium is less subject to alteration by P-N junction field.

B72-10088
TECHNIQUE MINIMIZES THE EFFECTS OF DROPOUTS ON TELEMETRY RECORDS
T. O. Anderson and W. J. Hurd
1972
NPO-11421

Recorder deficiencies are minimized by using two-channel system to prepare two tapes, each having noise, wow and flutter, and dropout characteristics of channel on which it was made. Processing tapes by computer and combining signals from two channels produce single tape free of dropouts caused by recording process.

B72-10089
ACCURATE MEASUREMENT OF TELEMETRY PERFORMANCE
R. W. Burt, N. C. Ham, C. T. Sterlzried, and M. S. Reid
1972
NPO-11457

Performance of high rate telemetry stations used in the Deep Space Network is verified. Measurement techniques are discussed.

B72-10091
CONTROL OF ACCELERATION IN SINE/RANDOM VIBRATION TESTS
R. C. Woodbury
1972
NPO-11482

Sampling output levels of accelerometers using largest output or any combination of outputs provide control of shaker for spacecraft vibration qualification tests.

B72-10094
INERTIAL REFERENCE UNIT
R. A. Crawford
1972
NPO-11518

Unit provides rate damping, linear velocity changes and angular position information to attitude control system during turns and motor burns.

B72-10098
SOLDERING IRON TEMPERATURE INDICATOR
C. D. Baker and G. A. Wiker
1972
NPO-11545

Thermocouple implanted in metal mass simulates heat transfer characteristics of connection which is to be soldered. Light signals indicate whether temperature is right, too high, or too low.

B72-10099
ARC PROTECTION SYSTEM FOR HIGH-POWER RF AMPLIFIERS

R. C. Chernoff
1972

NPO-11560

Protective system prevents damage or destruction of high-power RF amplifiers by arcs which may occur in output transmission line. Advantages of system are listed.

B72-10101
STANDARD ENVIRONMENTAL TESTING PRACTICES

R. Daniel, E. Gregory, J. Stoker, F. VanBiese, and R. C. Woodbury
1972

NPO-11567

Manual on procedural requirements for performing certain environmental tests on space flight equipment provides information for test equipment designers, quality control and production engineers. Contents of manual are summarized.

B72-10108
LOW NOISE ELECTROMAGNETIC FLOWMETER

V. J. Cushing (Eng.-Phys. Co.)

May 1972

M-FS-21291

Parasitic hum is removed by using an isophase magnetic field created within flowmeter and an enclosure which prevents leakage of flux field. Method prevents contamination of flow conduit and eliminates zero point drift.

B72-10109
TECHNIQUES FOR IMPROVING RELIABILITY OF COMPUTERS

W. C. Cater (IBM), C. E. McCarthy (IBM), D. C. Jessep (IBM), A. B. Wadia (IBM), F. G. Milligan (IBM), and W. G. Bouricius (IBM)

May 1972

M-FS-21326

Modular design techniques improve methods of error detection, diagnosis, and recovery. Theoretical computer (MARCS (Modular Architecture for Reliable Computer Systems)) study deals with postulated and modeled technology indigenous to 1975-1980. Study developments are discussed.

B72-10119
HIGH VOLTAGE PROTECTION NETWORK

J. M. Cambra

1972

ARC-10197

Circuit protects technical personnel and test equipment from hazardous currents conducted through safety barriers and into data acquisition equipment. Network isolates energy source, restricts arcing to remote area, and dissipates harmlessly residual energy transient.

B72-10131
HEART SIMULATOR

E. Palmer

May 1972

M-FS-21609

Unijunction oscillator controlled by potentiometer to generate a spike that may be converted by transformer action to the simulated heart beat is used as a calibrator for heart monitoring equipment.

B72-10139
AIRCRAFT COMMUNICATION VIA TELEFACSIMILE SYSTEM

R. L. Brown, Sr.

1972

M-FS-20839

Based on reading rate of between 500-1000 words/minute, transmitting typewritten matter only, system uses lowest possible

bandwidth to avoid overcrowding, while furnishing data as fast as it can be absorbed by pilot. Bandwidth requirements are less than 150 kHz, a considerable saving over conventional television.

B72-10141
ERRORS IN HYBRID COMPUTERS

C. O. Alford (Ga. Inst. of Tech.) and J. L. Hammond (Ga. Inst. of Tech.)

1972

M-FS-21289

Method is described for reduction of error components in numerical integration, sampling with zero hold order, and execution time delay.

B72-10164
INTERCONNECTIONS FOR FLUIDIC CIRCUITS

C. Mangion (TRW Systems Group)

1972

ARC-10481

Circuit elements are grouped on functional basis in rectangular two-dimensional planar arrays or modules. Another interconnection method brings all connections out to module edge. For smaller fluidic circuits, manifold and interconnections are fabricated as single blocks. Advantages of methods are given.

B72-10167
ILLUMINATION CONTROL SYSTEM

C. Beckman (Gen. Tech. Serv., Inc.)

1972

ARC-10527

Experiment, testing effects of constant light intensity on Arabidopsis growth, utilizes wide-spectrum fluorescent lamps monitored by photocell which controls the power supplied to lamp.

B72-10177
FLEXIBLE, LOW-COST SILICON SOLAR CELL ARRAYS

A. F. Forestieri, J. D. Broder, and D. T. Bernatowicz

May 1972 See also NASA-TM-X-52875

LEWIS-11069

Silicon solar cell arrays are pressure-bonded to flexible backing and protected by fluorinated ethylene propylene cover in one mechanized operation. Arrays packaged by this method are flexible, lightweight, insulated, breakage resistant and less expensive.

B72-10191
OVERLAY BOARD FOR CONTROL CONSOLES

C. T. Jackson

May 1972

ARC-10007

Board that fits over the control panel decreases errors and time loss. Device has cutouts for controls and indicators, bears all appropriate labeling information, can be removed with the changing computer assignments, and guards against accidental changes in control settings.

B72-10254
SOLID STATE TELEVISION CAMERA HAS NO IMAGING TUBE

C. T. Huggins

Jun. 1972

M-FS-21553

Camera with characteristics of vidicon camera and greater resolution than home TV receiver uses mosaic of phototransistors. Because of low power and small size, camera has many applications. Mosaics can be used as cathode ray tubes and analog-to-digital converters.

B72-10272
LIGHTNING FLASH DETECTION SYSTEM

W. J. Borucki and D. Billings

1972

ARC-10562

Array of photodetectors and associated circuitry continuously monitors entire horizon to measure distance and direction of lightning flashes.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B72-10285
VIDICON STORAGE TUBE ELECTRICAL INPUT/OUTPUT
P. Lipoma (Lockheed Electron. Co.)
Jun. 1972
MSC-14053

Electrical data storage tube is assembled from standard vidicon tube using conventional amplification and control circuits. Vidicon storage tube is simple, inexpensive and has an erase and preparation time of less than 5 microseconds.

B72-10286
DESIGN CURVE FOR LIQUID HELIUM STORAGE VESSELS
J. A. DiCarlo
Jun. 1972
LEWIS-11498

Development of equipment for storage of liquid helium is discussed. Derivation of design curve and working equations for estimating effects of either perfect or imperfect heat transfer in storage device are described. Mathematical models of heat transfer conditions are provided.

B72-10295
THE DESIGN OF AN AUTOMATED VERIFICATION OF REDUNDANT SYSTEMS
F. A. Ford (Radiation, Inc.), T. W. Hasslinger (Radiation, Inc.), and F. J. Moreno (Radiation, Inc.)
Jun. 1972 See also NASA-CR-125311
KSC-10702

Handbook describes design processes, presents design considerations and techniques, gives tutorial material on implementation and methodology, shows design aids, illustrates use of design aids and application samples, and identifies general practices to be adhered to or avoided.

B72-10296
NONDESTRUCTIVE TESTING OF MICROTAB WELDS
L. Feinstein and R. J. Hruby
Sep. 1972
ARC-10176

Introduction of sinusoidal signal across welded structure to determine reliability of integrated circuit connections is discussed. In-phase frequencies and quadrature frequency functions are used to evaluate weld reliability. Schematic diagram of test equipment and components is provided.

B72-10357
ZONE RADIOMETER MEASUREMENTS ON A MODEL ROCKET EXHAUST PLUME
Innovator not given (Cornell Aeron. Lab., Inc.) Jul. 1972
M-FS-21693

Radiometer for analytical prediction of rocket plume-to-booster thermal radiation and convective heating is described. Applications for engine combustion analysis, incineration, and pollution control by high temperature processing are discussed. Illustrations of equipment are included.

B72-10361
A STUDY OF THE POWER SPECTRAL DENSITY OF AN FM SIGNAL
H. L. Deffebach (Auburn Univ.)
Jul. 1972
M-FS-21070

Mathematical expressions describe an FM signal modulated by a composite video wave. Three general spectrum equations for FM signals are obtained by using three types of video information.

B72-10372
AUTOMATIC LIGHTNING LOCATION SYSTEM
T. Holdsworth and D. N. March
Dec. 1972
AEC-10077

Hyperbolic triangulation method was used for locating lightning storm path and position from VHF lightning charge emissions. Possible applications in electric power companies, forest fire lookout centers, airports, and pipeline companies are indicated.

B72-10383
SURVEY OF AIRCRAFT ELECTRICAL POWER SYSTEMS
C. H. Lee (AiRes. Mfg. Co.) and J. J. Brandner (AiRes. Mfg. Co.)
Jul. 1972 See also NASA-CR-110693
LEWIS-11678

Areas investigated include: (1) load analysis; (2) power distribution, conversion techniques and generation; (3) design criteria and performance capabilities of hydraulic and pneumatic systems; (4) system control and protection methods; (5) component and heat transfer systems cooling; and (6) electrical system reliability.

B72-10390
A CLOSED LOOP CRYOGENIC ENVIRONMENT PRESSURE REGULATING SYSTEM
J. C. Huguley (Brown and Root/Northrop) and L. A. Goudie (Brown and Root/Northrop)
Jul. 1972
MSC-13880

Nonlinear closed loop control system to regulate the pressure in a cryogenic environment is described. System employs four position contactor with two control bands to react to the signals. Diagrams of element transfer function and required equipment are included.

B72-10392
TWO-AXIS LEVELING DETECTOR SYSTEM
L. Weiner (Bendix Corp.)
Jul. 1972
M-FS-21344

Electro-mechanical device for measuring tilt angles in order to establish level base without optical reference is described. Angular displacement is detected by movement of bubble in conducting fluid containing electrode network. Electrical signal causes compensation for small movements in horizontal and vertical planes.

B72-10409
A SIMPLE DEAD-RECKONING NAVIGATIONAL SYSTEM
B. F. Walls, W. C. Mastin, and P. H. Broussard, Jr.
Jul. 1972
M-FS-21166

Simple navigation system is designed for vehicles operating in remote locations where it is not feasible to transport extensive equipment. System consists of four main components: directional gyrocompass to establish inertial direction; odometer to measure distance; signal processor to combine measured distance and direction; and sun compass to determine initial direction.

B72-10411
LASER BEAM DEFLECTION CONTROL: A CONCEPT
C. L. Garvie (Lockheed Electron. Co.)
Jul. 1972
MSC-13814

Improved control of laser beam deflection angles may result from new conceptual device. Reflectively coated magnetized particles are suspended in liquid-filled cell surrounded by two pairs of crossed electromagnetic coils and are selectively aligned by controlling magnetic fields. Ultrasonic energy source keeps particles suspended.

B72-10417
ROLL FUNCTION IN A FLIGHT SIMULATOR
A. E. Brain (Stanford Res. Inst.)
Aug. 1972
ARC-10557

Method introduces roll into the flying-spot scanner by modifying the scanning waveforms.

B72-10442
VERY HIGH SPEED DIRECT-READOUT, CONTROL AND RECORDING SYSTEM
J. W. Turner
Jul. 1972
M-FS-20658

Characteristics of electronic system for high speed readout, control, and recording of data are discussed. Operation of system

is described to show rate of data processing and accuracy obtainable. Primary advantage of system is providing direct recording of parameter value several times per second.

B72-10448
A BRUSHLESS dc SPIN MOTOR FOR MOMENTUM EXCHANGE ALTITUDE CONTROL

D. Stern (GE) and J. W. Rosenlieb (GE)

Jul. 1972

M-FS-14952

Brushless dc spin motor is designed to use Hall effect probes as means of revolving rotor position and controlling motor winding currents. This results in 3 to 1 reduction in watt-hours required for wheel acceleration, a 2 to 1 reduction in power to run wheel, and a 10 to 1 reduction in the electronics size and weight.

B72-10467
AIRLOCK CAUTION AND WARNING SYSTEM

W. J. Mayfield (McDonnell-Douglas Corp.), L. Z. Cork (McDonnell-Douglas Corp.), R. G. Malchow (McDonnell-Douglas Corp.), and G. L. Hornback (McDonnell-Douglas Corp.)

Aug. 1972

M-FS-21576

Caution and warning system, used to monitor performance and warn of hazards or out-of-limit conditions on space vehicles, may have application to aircraft and railway transit systems. System consists of caution and warning subsystem and emergency subsystem.

B72-10468
NEUTRON RADIOGRAPHIC VIEWING SYSTEM

W. Leysath (Zenith Radio Corp.) and R. L. Brown

Aug. 1972

M-FS-22024

Neutron radiographic viewing system consisting of camera head and control processor is developed for use in nondestructive testing applications. Camera head consists of neutron-sensitive image intensifier system, power supply, and SEC vidicon camera head. Both systems, with their optics, are housed on test mount.

B72-10471
UNSUPPORTED THIN FILM BEAM SPLITTER

R. C. Bastien (Perkin Elmer Corp.) and R. J. Scheuerman (Perkin Elmer Corp.)

Aug. 1972

GSFC-10525

Multilayer beam splitter system yielding nearly equal broadband infrared reflectance and transmittance in the 5 to 50 micron spectral region has been developed which will significantly reduce size and cost of light path compensating devices in infrared spectral instruments.

B72-10481
ENHANCED LAMB DIP FOR ABSOLUTE LASER FREQUENCY STABILIZATION

A. E. Siegman (Stanford Univ.), R. L. Byer (Stanford Univ.), and S. C. Wang (Stanford Univ.)

Aug. 1972

HQ-10695

Enhanced Lamb dip width is 5 MHz and total depth is 10 percent of peak power. Present configuration is useful as frequency standard in near infrared. Technique extends to other lasers, for which low pressure narrow linewidth gain tubes can be constructed.

B72-10501
INDEXING FILM WITH A FLUIDIC SENSOR

A. N. Maciel, Jr. (Singer/Gen. Precision, Inc.)

Aug. 1972

MSC-14117

Fluidic sensor is used to measure passage of film without mechanical contact with counting device. Same sensor system may be used for different sizes of film. System has two fluidic sensors and operates on principle of electrically recording interruptions in air stream.

B72-10507
PULSE-WIDTH-MODULATED DEVICE FOR PRECISION TEMPERATURE CONTROL

R. C. Heyser

Dec. 1972

NPO-11407

Temperature controller is described which reduces difference between temperature oscillations about control point. Standard temperature-sensitive resistor element is utilized which is highly stable and reproducible. Temperature sensing circuitry is conventional dc bridge with power supplied by battery or highly regulated supply source.

B72-10508
RADIO DIRECTION FINDER

L. M. Hershey

Dec. 1972

NPO-11573

Three-antenna interferometric system is described for homing on very high frequency transmitters. Antenna signals are sequentially sampled with single receiver and receiver output pulses are held for comparison of signals from outermost antennas with those of center antenna. System can be installed as redundant navigation system in case of failure of VOR receivers.

B72-10510
UNIVERSAL dc SIGNAL CONDITIONER

P. A. Bradanini (N. Am. Rockwell Corp.)

Aug. 1972

MSC-17526

Signal conditioner was designed which can condition dc signals over range of + or - volts. It is lighter, has lower initial and maintenance costs, and higher reliability than conventional discrete circuit designs. System incorporates linear integrated circuits in conjunction with hybrid, thin film circuit technology to achieve high degree of circuit miniaturization.

B72-10535
MAGNETIC CIRCUITRY MUTUAL COUPLING PROBE

P. L. Anthony (N. Am. Rockwell Corp.)

Sep. 1972

M-FS-21664

Development of magnetic probe for nondestructive testing of multilayer printed circuit boards to determine existence of opens or shorts is reported. Components of probe are described and procedures for operation are discussed. Two illustrations are provided to show magnetic circuits and principles of operation.

B72-10541
POTENTIOMETER, CONSTANT TENSION AND LUBRICATION DEVICE

H. J. Smith (Boeing Co.)

Dec. 1972

KSC-10723

Wiper assembly is described for feedback potentiometers which provides self cleaning, self lubrication, and tension within controlled limits. Each end of the assembly contains loose fitting leather pad thoroughly soaked in wiper lubricating fluid. Cleaning and lubrication of potentiometer resulting from use of lubrication soaked leather accomplishes noise free operation.

B72-10545
A COMPACT BATTERY POWERED DIGITAL THERMOMETER

G. Zivley (SCI Electron., Inc.)

Sep. 1972

MSC-14084

Development of thermometer to provide quick and accurate temperature readings using thermal resistance probe as temperature-to-resistance transducer is discussed. Details of construction and operations are described. Illustration of circuit and components is provided.

B72-10548
THE THIN FILM MICROWAVE IRIS

R. L. Ramey (Va. Univ.), H. S. Landes (Va. Univ.), and E. A. Manus (Va. Univ.)

02 ELECTRONIC/ELECTRICAL SYSTEMS

Sep. 1972 See also NASA-CR-1364

LANGLEY-10511

Development of waveguide iris for microwave coupling applications using thin film techniques is discussed. Production process and installation of iris are described. Iris improves power transmission properties of waveguide window.

B72-10564

NEW PULSING TECHNIQUE MAY IMPROVE RADAR RANGING SYSTEMS

M. V. Gowdey

Sep. 1972

ARC-10600

Mode of operation for radar ranging system based on ringing frequencies is described. Methods for measuring range and range rate are discussed. Mathematical model is included to describe ringing frequency. Application to acoustic sounding devices is proposed.

B72-10573

AN IMPROVED LEARNING DECODER

G. D. Doland (Lockheed Electron. Co., Inc.)

Oct. 1972

MSC-14070

Learning decoder was developed which operates at system data rate without limiting data rate. Decoder is much simpler than those in existence, operates near Shannon's channel capacity, and automatically recovers operation after loss of signal.

B72-10591

A SIMPLIFIED, COMPACT STATIC SHIFT REGISTER

R. L. Pryor (RCA) and A. M. Smith (RCA)

Sep. 1972

HQ-10723

Shift register was developed which uses only one D type flip-flop and improves packaging density by approximately 25% over the usual arrangement. Circuit is compromise between full master-slave arrangement and dynamic shift register, with limitation only of length of time that clock can be held high during new data entry.

B72-10609

OSCILLATING HOT-WIRE ANEMOMETER

J. M. Conley

Dec. 1972

NPO-11634

Performance analysis was made of oscillating hot-wire anemometer electrical output in gas stream. Advantages include no calibration and measurement of fluid direction as well as fluid speed.

B72-10639

A RANGE EXPANDING SIGNAL CONDITIONER

W. A. Russell (McDonnell-Douglas Corp.), R. L. Grant (McDonnell-Douglas Corp.), and M. L. Scheer (McDonnell-Douglas Corp.)

Oct. 1972

M-FS-21720

Telemetry system modifications to improve signal resolution are described. Process uses zero suppression technique which consists of subtracting known voltage from input and amplifying remainder. Schematic diagram of circuit is provided and details of operation are presented.

B72-10647

A VISUAL-DISPLAY AND STORAGE DEVICE

D. R. Bosomworth (RCA) and W. H. Moles (RCA)

Oct. 1972

GSFC-10901

Memory and display device uses cathodochromic material to store visual information and fast phosphor to recall information for display and electronic processing. Cathodochromic material changes color when bombarded with electrons, and is restored to its original color when exposed to light of appropriate wavelength.

B72-10664

FAST RESPONSE DENSITOMETER FOR MEASURING LIQUID DENSITY

Innovator not given (Ind. Nucleonics Corp.) Oct. 1972

M-FS-14478

Densitometer was developed which produces linear voltage proportional to changes in density of flowing liquid hydrogen. Unit has fast response time and good system stability, statistical variation, and thermal equilibrium. System accuracy is 2 percent of total density span. Basic design may be altered to include measurement of other flowing materials.

B72-10668

TWO-SPEED DEFLECTION SYSTEM FOR ELECTRON MICROPATTERN GENERATOR

P. R. Malmberg (Westinghouse)

Oct. 1972

M-FS-22117

Development of dual speed deflection system for electron beam micropattern generator system is discussed. Factors affecting application of electron beam lithography are analyzed. Procedure for using two speed deflection system is described.

B72-10680

AN IMPROVED DATA TRANSFER AND STORAGE TECHNIQUE FOR HYBRID COMPUTATION

A. M. Hansing (Lockheed Missiles and Space Co.)

Oct. 1972

M-FS-22043

Improved technique was developed for transferring and storing data at faster than real time speeds on hybrid computer. Predominant advantage is combined use of electronic relays, track and store units, and analog-to-digital and digital-to-analog conversion units of hybrid computer.

B72-10682

LOW DISTORTION AUTOMATIC PHASE CONTROL CIRCUIT

G. Hauge (Martin Marietta Corp.) and C. W. Pederson (Martin Marietta Corp.)

Oct. 1972

M-FS-21671

Circuit for generation and demodulation of quadrature double side band signals in frequency division multiplexing system is described. Circuit is designed to produce low distortion automatic phase control. Illustration of circuit and components is included.

B72-10694

PEAK-POWER-POINT MONITOR FOR SOLAR PANEL

A. I. Schloss

Dec. 1972

NPO-11708

Attempt was made to determine solar cell panel peak power capability without disrupting power flow from panel. Separate solar cell strings were switched from panel circuits, and increasingly larger loads were added rapidly until peak power points were transversed. String wattage output was recorded and all stored string measurements summed together indicate peak power point in panel.

B72-10724

ANALYSIS OF CIRCUITS INCLUDING MAGNETIC CORES (MTRAC)

G. R. Hanzen, D. Nitzan, and J. R. Herndon

Dec. 1972

NPO-11494

Development of automated circuit analysis computer program to provide transient analysis of circuits with magnetic cores is discussed. Allowance is made for complications caused by nonlinearity of switching core model and magnetic coupling among loop currents. Computer program is conducted on Univac 1108 computer using FORTRAN IV.

B72-10751

ACOUSTICAL ANALYSIS SYSTEM

R. B. Tatge (GE) and P. F. Scott (GE)

Dec. 1972

GSFC-11087

Integrated system is described which replaces several instruments normally used to analyze acoustical data in failure detection of mechanical or fluid systems. Analysis system extracts and measures repetitive waveforms superimposed on noisy background and compares amplitude with internally stored waveforms. Equipment used in system may be interfaced with general purpose digital computer.

B72-10752

AUTOMATIC METHOD OF MEASURING SILICON-CONTROLLED-RECTIFIER HOLDING CURRENT

E. A. Maslowski

Dec. 1972 See also NASA-TM-X-2463

LEWIS-11898

Development of automated silicon controlled rectifier circuit for measuring minimum anode current required to maintain rectifiers in conducting state is discussed. Components of circuit are described and principles of operation are explained. Illustration of circuit is provided.

B73-10006

A REMOTE TEST PARAMETER PROFILE DISPLAY

J. L. Harrold and J. E. Dudenhofer

Mar. 1973

LEWIS-11872

Multiplexed digital recording system with simple interface between it and standard commercially available oscilloscopes was developed. System included: rapid set-up, minimum input cabling, low cost, display expansion capability, and portability.

B73-10010

REMOTE MEASUREMENTS BY TELEPHONE

R. L. Miller

Mar. 1973

LEWIS-11704

Inexpensive device permits measurement and remote interrogation of variables such as voltage, temperature, pressure, or humidity by standard telephone equipment. Remote interrogation of wind direction and velocity, humidity, or water levels on flood-prone river are other possible representative uses for this device.

B73-10011

LOW COST UNIFORM HEAT SOURCE

R. B. Smith and G. M. Prok

Mar. 1973 See also NASA-TM-X-2374

LEWIS-11903

Electrically powered heat source was developed for ground simulation of isotope heat-source assembly in Brayton power system. Heat source, which operates on ordinary 110 vac power, consists of tungsten filament heating element wound onto a spirally grooved boron nitride core and inserted in a hollowed-out graphite hexahedron.

B73-10043

AN AUTOMATIC LIGHTNING DETECTION AND PHOTOGRAPHIC SYSTEM

R. J. Wojtasinski, L. Holley, J. L. Gray, and R. B. Hoover

Feb. 1973

KSC-10728

Conventional 35-mm camera is activated by an electronic signal every time lightning strikes in general vicinity. Electronic circuit detects lightning by means of antenna which picks up atmospheric radio disturbances. Camera is equipped with fish-eye lense, automatic shutter advance, and small 24-hour clock to indicate time when exposures are made.

B73-10051

PROTOTYPE ULTRASONIC INSTRUMENT FOR QUANTITATIVE TESTING

L. C. Lynworth (Panametrics, Inc.), J. L. Dubois (Panametrics, Inc.), and P. R. Kranz (Panametrics, Inc.)

Feb. 1973

M-FS-22350

Ultrasonic instrument has been developed for use in quantitative nondestructive evaluation of material defects such as cracks, voids, inclusions, and unbonds. Instrument is provided with standard pulse source and transducer for each frequency

range selected and includes integral aids that allow calibration to prescribed standards.

B73-10052

OVEN TEMPERATURE CONTROLLER FOR ELECTRONIC COMPONENTS

S. W. Billingsley

Feb. 1973

GSFC-11466

Simple, inexpensive circuit has been developed which provides active temperature control to certain precision electronic components such as crystal oscillators and Zener diodes.

B73-10074

MEASURING THE ELECTRIC FIELD OF A CLOUD

R. J. Wojtasinski and D. D. Lovall

Mar. 1973

KSC-10731

Network of electric field measuring stations has been developed to assess lightning hazard of charged clouds. Sensor data are digitized and transmitted to central processing area for display.

B73-10093

FOUR-PHASE DIFFERENTIAL PHASE SHIFT RESOLVER

P. M. Hopkins (Lockheed Electronics Co.) and W. M. Wallingford (Lockheed Electronics Co.)

Jun. 1973

JSC-14065; JSC-14066

Two systems have been developed to resolve phase uncertainty without transmitting reference signals. In both methods signal is impressed on carrier as differential, rather than absolute, phase shift. At the receiver four-phase demodulation and logic process unambiguously resolves differential phase shift of input carrier.

B73-10094

CARRIER EXTRACTION CIRCUIT

K. Solomon (RCA), J.R. Allen (RCA), A. Jackson (RCA), and R. W. Allen (RCA)

Mar. 1973

JSC-14262

Feedback loop extracts demodulated reference signals from IF input and feeds signal back to demodulator. Since reference signal is extracted directly from carrier, no separate reference need be transmitted. Circuit obtains coherent carrier from balanced or unbalanced four-phase signal of varying characteristics.

B73-10100

AUTOMATIC SPEED CONTROL OF HIGHWAY TRAFFIC

E. E. Klingman

Feb. 1973

M-FS-21791

Vehicle control system monitors all vehicles in its range, and automatically slows down speeding vehicles by activating governor in vehicle. System determines only maximum speed; speeds below maximum are controlled by vehicle operator. Loss of transmitted signal or activation of emergency over-ride will open fuel line and return control to operator.

B73-10106

A TECHNIQUE TO ELIMINATE FALSE LOCK IN PCM DEMODULATION

H. S. Kobayashi

May 1973 See also B73-10107

JSC-12494

One loop provides error signal which adjusts voltage controlled oscillator. Second loop multiplies input signal with generated in-phase signal. Both signals are integrated over bit period. First loop detects null which indicates lockup, and second loop emphasizes impact signal information.

B73-10107

PHASE SHIFT KEYED, PULSE CODE MODULATED SIGNAL SYNCHRONIZER

H. S. Kobayashi

May 1973 See also B73-10106

JSC-12462

02 ELECTRONIC/ELECTRICAL SYSTEMS

Signal is demodulated and synchronized by three loop circuits: "Q" loop uses quadrature signal to stabilize frequency; "B" loop acts on baseband signal to stabilize phase; and decoding "I" loop acts on in-phase signal. Synchronizer may be used to eliminate false-lock.

B73-10112 DIGITAL NOTCH FILTER

B. Z. Meers, Jr.

Aug. 1973

KSC-10182

Filter determines whether time period of incoming signal matches time preset in filter. When signals do not match, high or low frequency deviation reading is displayed digitally.

B73-10118 AN AMPERE-HOUR METER FOR BATTERIES

B. D. Eklund (McDonnell Douglas Corp.)

Jun. 1973

M-FS-22067

Up-down counter records charge as well as discharge in tests of rechargeable batteries. System uses reversible counter preset to represent 100% charge. As battery discharges, total count decreases; as battery is recharged, counter moves back to 100% indication.

B73-10119 NEW MOTOR SHAFT ANGULAR ACCELEROMETER CONCEPT

F. O. Smetana (North Carolina Univ.)

Mar. 1973

LANGLEY-11030

Concept permits measurement of the acceleration of continuously rotating shafts without use of slip rings or telemetry and with little additional inertial load. Concept has application in servomotor control circuits and easy-to-fly airplane controls.

B73-10122 LEAPS (LASER ELECTRO-OPTICAL ALIGNMENT POLE FOR SURVEYING)

L. Caudill

May 1973

GSFC-11262

Azimuthal bearing between two obscured points is measured by placing laser beam at one of the points. Beam is directed straight up into the air so that some part of it may be detected from any position a reasonable distance away.

B73-10123 BRAKE WEAR WARNING DEVICE: A CONCEPT

S. F. Hawkins (Rockwell Intern. Corp.)

May 1973

JSC-19157

Heat-insulated wire is introduced through brake shoe and partially into brake lining. Wire is connected to positive terminal and light bulb. When brakes wear to critical point, contact between wire and wheel drum grounds circuit and turns on warning light.

B73-10126 INTENSIVE CARE ALARM SYSTEM

J. L. Christensen (George Washington Univ.) and A. L. Herbert (George Washington Univ.)

May 1973

GSFC-11377

Inductive loop has been added to commercially available call system fitted with earphone receiver. System transmits high frequency signals to nurse's receiver to announce patient's need for help without disturbing others.

B73-10127 AUTOMATIC QUADRATURE CONTROL AND MEASURING SYSTEM

J. F. Hamlet

May 1973

M-FS-21660

Quadrature is separated from amplified signal by use of phase detector, with phase shifter providing appropriate reference. Output

of phase detector is further amplified and filtered by dc amplifier. Output of dc amplifier provides signal to neutralize quadrature component of transducer signal.

B73-10129 SOLAR ASPECT DETERMINATION SYSTEM

W. H. Farthing and H. F. Frisbie

May 1973

GSFC-11444

Sensor containing commercially available solid-state position-sensitive light detector provides complete space-vehicle sun or moon vector information.

B73-10132 DIGITAL VIDEO DISPLAY SYSTEM

A. I. Zygielbaum, W. L. Martin, and A. Engle

Mar. 1973

NPO-11342

System displays image data in real time on 120,000-element raster scan with 2, 4, or 8 shades of grey. Designed for displaying planetary range Doppler data, system can be used for X-Y plotting, displaying alphanumeric, and providing image animation.

B73-10134 LOW-NOISE MICROWAVE POLARIMETER

G. S. Levy, D. A. Bathker, and F. E. McCrea

Mar. 1973

NPO-11512

Two quarterwave-plate polarizers inserted between rotary waveguide joints transform received signals from arbitrary linear to circular polarizations and then from circular to fixed linear polarizations. Fixed linear polarizations are applied to amplifiers and filters in usual fashion.

B73-10138 COMPUTER-CONTROLLED VIBRATION TESTING

C. P. Chapman and B. Sotomayor

Mar. 1973

NPO-11612

System features quickly achieved steady state, increased accuracy of spectrum definition, and true Gaussian amplitude distribution of resulting signals. Controlled shock-tests might also be tried with this system.

B73-10141 CODE-REGENERATIVE CLEAN-UP LOOP FOR A RANGING TRANSPONDER

W. J. Hurd

Mar. 1973

NPO-11707

Digital processing system phase locks on received ranging signal and creates clean replica of received ranging code. System is broadly applicable to variety of terrestrial ranging problems, including oceanic navigation.

B73-10144 A NONLINEAR-COHERENCE RECEIVER

M. K. Simon and W. C. Lindsey (Univ. of Southern Calif.)

Mar. 1973

NPO-11921

Mathematical analysis and detailed study of generic model for coherent receiver has demonstrated that nonlinear coherence between given biphas-modulated input signal and supplied reference signal can be used in receivers to improve telecommunication systems.

B73-10145 POSITIVE CONTACT RESISTANCE SOLDERING UNIT

R. D. Banta (Boeing Co.)

Mar. 1973

KSC-10242

Ohmmeter is used to indicate positive contact between electrodes and workpiece. This permits good soldering and prevents damage to electronic devices.

B73-10146 A NEW DRY BIOMEDICAL ELECTRODE

R. S. Luce (Lockheed Missiles & Space Co.) and G. J. Cleveland (Lockheed Missiles & Space Co.)
May 1973

JSC-14321

Electronic circuitry contains new operational amplifier which incorporates monolithic super-gain transistors. Electrode does not provide voltage amplification; instead, it acts as current amplifier to make it possible to pick up electrical potentials from surface of highly resistant dry skin.

**B73-10154
TIME-BASED PRIORITY SELECTION FOR ANALOG CIRCUITS**

J. D. Fageoi (Rockwell Intern. Corp.)
Jun. 1973

M-FS-24242

Unlimited channel capacity multiplexing circuit is hierarchially structured to achieve priority encoding. Circuit could be used for automatic patient monitoring systems and diagnostic test systems in automotive and communications industry.

**B73-10157
AN INEXPENSIVE VEHICLE SPEED DETECTOR**

P. H. Broussard
May 1973

M-FS-22601

Low-power minicomputer can plug into automobile cigarette lighter. It measures time it takes observed car to travel premeasured distance and provides immediate readout of speed. Potentially, detector could be manufactured for less than \$200 per unit and would have very low maintenance cost.

**B73-10159
INTEGRABLE POWER GYRATOR**

E. Hochmair (NAS)
May 1973

M-FS-22342

Further study of Y-matrix and Z-matrix configuration has led to development of efficient, dependable high-quality gyrators. Efficiency of new gyrators may approach theoretical limit of 78.5% with further improvements. Both designs are comparatively easy to integrate by implementing technology used with conventional operational amplifiers.

**B73-10161
GYRATOR CIRCUIT USING FIELD EFFECT TRANSISTORS**

E. S. Hochmair (NAS)
May 1973

M-FS-21433

Gyrator circuit is especially useful in integrated circuits for such purposes as simulating inductors with capacitors. Circuit is adaptable to semifloating and full floating configurations. It has excellent response, low power consumption, and high energy storage capacity.

**B73-10167
BIPOTENTIAL MONITORING WITH INEXPENSIVE OFFICE-TYPE CASSETTE RECORDERS**

R. L. Wilbur (Southwest Res. Inst.)
Jun. 1973

M-FS-22566

Low-cost, modified cassette is part of system that accepts biomedical data for storage. System accepts wide range of data and is compactly packaged for portability. Standard office recorder with automatic level control, multiple inputs, radio, and battery operation may be used for recording stage.

**B73-10169
REAL TIME OPTICAL FIGURE SENSOR**

H. J. Robertson (Perkin-Elmer Corp.)
Jun. 1973

M-FS-22123

Mirrors produced for various optical systems require precise surface finishing. Sensor, developed for measuring mirror surface, is compensated for interferences from temperature and air disturbances and is capable of measuring mirrors with diameters of up to 2 meters.

B73-10170

PRE-EMPHASIS DETERMINATION FOR AN S-BAND CONSTANT BANDWIDTH FM/FM STATION

G. R. Wallace (Sperry Rand Corp.) and W. E. Salter (Sperry Rand Corp.)

May 1973

M-FS-22135

Telemetry bands are being reassigned to UHF at 1500 and 2200 MHz. Conversion primarily requires changes in equipment used in RF link, while many of same subcarrier oscillators, mixer amplifiers, and frequency discriminators can be used.

B73-10173

RECOVERY OF RECORDINGS FROM HEAT DAMAGED MAGNETIC TAPES

J. F. Melugin and D. E. O'Brien, III

Jun. 1973

JSC-14219

Damaged tapes can now be repaired at home as long as damage does not extend to layer-to-layer adhesion within tape roll. Splice repaired section into good roll or cassette for copying. Every effort should be made to complete copying on first run, because fidelity in repaired section deteriorates with each repetition.

B73-10178

DETERMINING DISTANCE TO LIGHTNING STROKES FROM A SINGLE STATION

L. H. Ruhnke (NOAA)

Jun. 1973

KSC-10698

Electronic system can rapidly determine location of lightning strikes occurring within 30 km range. Longer distances are also determined, but with reduced accuracy. Studies have shown that lightning bolt emits electromagnetic wavefront; distance to lightning is determined from ratio of magnetic to electric field.

B73-10189

SIGNAL CONDITIONER TEST SET

W. H. Houck and J. D. Stiberg

Jun. 1973

KSC-10750

Compact, light-weight, solid-state test set can be used to check signal conditioning modules while they are installed in system. Test sets may also be used to cycle ground computer, if it is suspected of malfunctioning, rather than using signal conditioners.

B73-10191

JUNCTION RANGE FINDER

S. Morissette (Illinois Inst. of Tech.), R. G. Sea (Illinois Inst. of Tech.), and M. J. Frazier (Illinois Inst. of Tech.)

Jun. 1973

KSC-10108

Electronic system locates interferences in radar reception. System utilizes well known frequency-modulated continuous-wave technique to locate objects with nonlinear impedances. FM transmitter generates signal through bandpass filter which eliminates higher order harmonics around carrier frequency.

B73-10195

AUTOMATED OPERATION OF AN INSTRUMENTATION FM TAPE RECORDER

A. S. Asadourian and D. A. Perz

Nov. 1973

LEWIS-11941

Recorder did not possess erase head nor was it capable of automatically rewinding reel of tape for reuse. Test results show that FM carrier recording signal with sufficient intensity will by itself erase previously recorded data as new data are being recorded. Automatic rewinding was accomplished by adding conventional metal leaders and appropriate circuitry.

B73-10202

TETRAD BUBBLE DOMAIN CHIP ARRANGEMENT FOR MULTIPLEXING

02 ELECTRONIC/ELECTRICAL SYSTEMS

G. S. Almasi (IBM)

Jun. 1973

M-FS-22296

Rotating magnetic field of bubble domain memory is used to obtain time-division multiplexing of bubble domain circuits into quadrants. Memory bits are assigned on bit-per-chip rather than bit-per-module basis; power is reduced by circulating only portion of bubbles at a time.

B73-10217

INTEGRATED P-CHANNEL MOS GYRATOR

E. Hochmair (NAS)

Aug. 1973

M-FS-22343

Several circuits can be integrated into one chip for applications which require more than one gyrator. They can also be integrated with other p-channel MOS circuits to eliminate need for external connections. Devices can operate at economical low-power levels, because they use FET amplifiers that do not degrade with decreases in supply.

B73-10223

HIGH-SENSITIVITY RECEIVER FOR CO2 LASER COMMUNICATIONS

B. Peyton (Cutler Hammer Corp.), A. Dinardo (Cutler Hammer Corp.), (Cutler Hammer Corp.), G. Kanischak, R. Lange (Cutler Hammer Corp.), and F. R. Arams (Cutler Hammer Corp.)

Aug. 1973

GSFC-11455

Wideband heterodyne receiver provides detection and demodulation of incident frequency modulated laser signal; search and acquisition circuitry to align two stations; tracking circuitry to maintain spatial alignment; and laser frequency monitor to frequency lock the transmit and local oscillator lasers.

B73-10225

IMPROVED DESIGN OF ELECTROPHORETIC EQUIPMENT FOR RAPID SICKLE-CELL-ANEMIA SCREENING

J. M. Reddick (Howard Univ.) and I. Hirsch (Howard Univ.)

Feb. 1974

GSFC-11794

Effective mass screening may be accomplished by modifying existing electrophoretic equipment in conjunction with multisample applicator used with cellulose-acetate-matrix test paper. Using this method, approximately 20 to 25 samples can undergo electrophoresis in 5 to 6 minutes.

B73-10226

A CLOSED, DIGITAL TELEPHONE SYSTEM

L. G. Monford, Jr.

Aug. 1973

JSC-13912

Digital system can accommodate sixteen or more telephone or data units and eight, simultaneous two-way conversations through only four interconnecting wires. It uses fewer circuit components, is not bulky or complex, and requires no central exchange control.

B73-10235

FLAMMABILITY CONTROL FOR ELECTRICAL CABLES AND CONNECTORS

W. O. Wick (McDonnell Douglas Corp.) and D. L. Buckey (McDonnell Douglas Corp.)

Aug. 1973

M-FS-21584

Technique of covering fire-hazardous sections of electrical wiring with fireproof materials prevents fires from spreading in oxygen-enriched atmospheres and eliminates use of heavy metal enclosures. Materials used to cover potting on connectors and ground terminals are made from Teflon-coated Beta cloth and Fluorel, a nonflammable fully-saturated polymer.

B73-10236

MICROMINIATURIZED, BIOPOTENTIAL CONDITIONING SYSTEM (MBCS)

N. Belasco, S. L. Pool, G. J. Cleveland (Lockheed Missiles & Space Co.), G. M. Loh (Lockheed Missiles & Space Co.), R. S. Luce (Lockheed Missiles & Space Co.), M. I. Lipanovich (Lockheed Missiles & Space Co.), H. L. Petersen (Lockheed Missiles & Space Co.), and D. W. Mangold (Boeing Co.)

Aug. 1973

JSC-14180

Multichannel, medical monitoring system allows almost complete freedom of movement for subject during monitoring periods. System comprises monitoring unit (biobelt), transmission line, and data acquisition unit. Belt, made of polybenzimidazole fabric, is wrapped around individual's waist and held in place by overlapping sections of Velcro closure material.

B73-10243

LASER SYSTEM DETECTS TOWER DEFLECTIONS

R. H. Fabik

Nov. 1973

LEWIS-11870

Continuously measure and record deflection of facility during testing. Facility deflections are then subtracted from shroud deflections during data reduction on computer. System is based on tracking light beam by using two-axis photo detector and feeding signals into X and Y servo system.

B73-10255

A MAGNETICALLY FOCUSED IMAGE TUBE EMPLOYING AN OPAQUE PHOTOCATHODE

C. B. Johnson (Bendix Corp.) and K. L. Hallam (Bendix Corp.)

Aug. 1973

GSFC-11602

Image converter has been developed which uses opaque photocathode for improved efficiency. Device is easier to fabricate than previous semi-transparent photocathode converters and uses compounds from Groups 3-5 that are responsive to wave-lengths between ultraviolet (approximately 100 nm) and near infrared region (approximately 1000 nm).

B73-10257

FAST RECHARGE CIRCUIT FOR Q-SWITCHED LASERS

R. L. Hansen (GTE Sylvania Inc.)

Aug. 1973

GSFC-11510

Cavity-dumped lasers employ electrooptic-effect cell to alternately block and release laser pulse. Cell requires high-speed switching circuit that can apply and remove high voltage. Solid-state circuit employs complementary transistor switches which can switch at rates greater than 5 kHz, eliminate warmup time, provide variable voltage wave-form, and allow polarity reversal.

B73-10261

ELECTROSHOCK PROTECTION CIRCUIT

H. Heskett (Martin Marietta Corp.), J. Meincer (Martin Marietta Corp.), and A. L. Inglis

Aug. 1973

JSC-14222

Circuit was developed to prevent accidental shock through electrodes used to test subjects as part of Skylab program. This circuit is placed between electrical apparatus and electrode that is attached to patient's body. Thus, patient is effectively protected from dangerous electrical shock that might be caused by failure in electrical apparatus.

B73-10267

LASER VELOCIMETER FOR SIMULTANEOUS TWO-DIMENSIONAL VELOCITY MEASUREMENTS

K. L. Orloff, G. R. Grant, and W. D. Gunter, Jr.

Jul. 1973

ARC-10637

Laser velocimeter provides simultaneous orthogonal measurements in manner which minimizes many problems attending prior systems, and allows spatial traversing of flowfield in order to obtain velocity profiles. Velocimeter permits rapid interrogation of unsteady flows where area of interest is of the order of one meter in extent and flow does not vary appreciably over time of about one second.

B73-10273
TWO-CARRIER COMMAND MODULATION SYSTEM

M. F. Easterling
 Jun. 1973

NPO-11548

Two carriers transmit two high-power signals from single transmitter, each phase-modulated by subcarrier which, in turn, is modulated by data bits; switching between two carriers is alternated at high rate. Resulting composite signal is multiplied up to desired frequency and used to drive power amplifier which feeds transmitting antenna.

B73-10275
TIME-SYNCHRONIZED VLF PHASE-TRACKING RECEIVER

S. C. Ward
 Jun. 1973

NPO-11600

Coded signals transmitted at very low frequencies by National Bureau of Standards via its radio facility WWVL contain both primary time and frequency information. Synchronization of local time with WWVL signal standard requires comparison of phase differences between transmitted signal and output of traveling atomic clock such as rubidium frequency standard.

B73-10277
IMAGE DATA RATE CONVERTER: A CONCEPT

F. C. Billingsley
 Jun. 1973

NPO-11659

Establish data tracks on periphery of rotating drum and axially displace entire drum to place given track in alignment with either fixed or rotating read/record head. Accurate control of speed drum and rotating head can be accomplished by using separate synchronous motors driven by digitally-set oscillators to provide required difference in speed.

B73-10280
PRESSURIZED LIGHTING SYSTEM

G. A. Phlieger
 Aug. 1973

KSC-10644

Safe lighting assembly has been constructed for hostile environments. Assembly is ventilated by inert gas to prolong life of lamps. Lighting assembly contains control box, number of lamps connected in parallel, several pilot lights, and ventilating circuit. Control box is provided with components for monitoring and controlling flow of ventilating gas through lamp assemblies.

B73-10281
HIGH SPEED DIRECT-BINARY TO BINARY-CODED-DECIMAL CONVERTER AND SCALER

P. C. Toole
 Aug. 1973

KSC-10326

Telemetry (pulse code modulated) digital system usually sends binary numbers representing some parameter that is not value of binary number. Received binary number must be scaled and converted to binary coded decimal to operate readout device to display true value. Group of adders speed up binary number conversion and scaling in one operation.

B73-10282
COSMIC DUST OR OTHER SIMILAR OUTER-SPACE PARTICLES LOCATION DETECTOR

S. Aver
 Aug. 1973

GSFC-11291

Cosmic dust may be serious radiation hazard to man and electronic equipment caught in its path. Dust detector uses two operational amplifiers and offers narrower areas for collection of cosmic dust. Detector provides excellent resolution as result of which recording of particle velocities as well as positions of their impact are more accurately determined.

B73-10285
DIGITAL TV IMAGE ENHANCEMENT SYSTEM

G. A. Biernson (GTE Sylvania)

Aug. 1973

GSFC-11256

Efficient, digital image-enhancement process has been developed for high-resolution slow-scan TV images. Scan converter is no longer subject to registration errors, which become more serious as resolution increases. To implement feedback image enhancement system, digital processing is used; otherwise there is excessive loss of image information, particularly in video delay lines.

B73-10288
CIRCULARLY-POLARIZED MULTIBAND TELEMETRY TRACKING ANTENNA

K. E. Woo

Jul. 1973

NPO-11264

Utilize coaxial horn feed to illuminate reflector; feed has inner horn for X-band, and outer horn for S-band. Tracking error signals for servo correction are derived from measurements of relative phase and relative amplitude between two modes.

B73-10289
DATA MULTIPLEXER USING A TREE SWITCH

R. A. Easton and E. E. Hilbert

Jul. 1973 See also B73-10290

NPO-11333

Self-decoding FET-hybrid or integrated-circuit tree configuration uses minimum number of components and can be sequenced by clock or computer. Redundancy features can readily be incorporated into tree configuration; as tree grows in size and more sensors are included, percentage of parts that will affect given percentage of sensors steadily decreases.

B73-10290
FLEXIBLE FORMAT, COMPUTER ACCESSED TELEMETRY SYSTEM

R. A. Easton and E. E. Hilbert

Jul. 1973 See also B73-10289

NPO-11358

With this system, it is possible to sample and generate two or more simultaneous formats; one can be transmitted to ground station in real time, and other is stored for later transmission. Sensor output comparison data, plus information to control format, compression algorithm, and allowable degree of sensor activity, are stored in memory.

B73-10291
HIGH-GAIN ANTENNA WITH SINGLY-CURVED REFLECTOR

A. C. Ludwig

Jul. 1973

NPO-11361

Reflector collects energy over large region of space and focuses it toward small region where antenna feed is located. When incident energy is in form of plane wave, logical choice for shape of reflecting surface is paraboloid which converts plane wave into spherical wave that converges at a point.

B73-10293
IMPROVED MASERS FOR X-BAND AND Ku BAND

R. C. Clauss and R. B. Quinn

Jul. 1973

NPO-11437

Slow-wave structure of traveling-wave maser utilizes comb system which is comprised of ruby on one side and alumina on other; alumina also supports isolator material. Radiation at pump frequency is coupled to ruby through shaped alumina strips. Contact between ruby bars and comb completes conductance path for heat transfer.

B73-10294
NUMERICAL INTERACTIVE CONTROLLER

S. S. Brokl and A. I. Zygielbaum

Jul. 1973 See also B73-10132

NPO-11497

Device allows interaction of operator with data in computer central processor in order to shift frame of data in Cartesian coordinates and slew desired data into view. "Cursor generator

02 ELECTRONIC/ELECTRICAL SYSTEMS

program," in conjunction with device, provides light pen with sufficient resolving power to identify any particular set of coordinates with single-cell accuracy.

B73-10297
DIGITAL SERVO CONTROL OF RANDOM SOUND FIELDS
R. B. Nakich (Time Zero Corp.)
Jul. 1973 See also B73-10139
NPO-11623

It is necessary to place number of sensors at different positions in sound field to determine actual sound intensities to which test object is subjected. It is possible to determine whether specification is being met adequately or exceeded. Since excitation is of random nature, signals are essentially coherent and it is impossible to obtain true average.

B73-10299
MULTIPLE-REFLECTION CONICAL MICROWAVE ANTENNA
R. E. Oliver
Jul. 1973 See also B73-10291
NPO-11661

Conical-Gregorian antenna concept, using conical reflector, promises excellent rf performance and offers potential advantages in areas of mechanical and structural design, surface measurement, and in furlability. Multiple reflection scheme between one or more subreflectors and main reflector is utilized. Subreflector can be reduced to as little as 0.1 the diameter of main reflector.

B73-10305
DYNAMIC POWER LOAD SIMULATOR
K. P. Joncas (Avco Corp.), S. Birnbach (Avco Corp.), and M. Lambert, III (Avco Corp.)
Aug. 1973 See also NASA-CR-115760
JSC-14285; JSC-14286

Two independent models simulate dynamic and steady-state responses of electrical and electronic equipment under power load. One is resistance/capacitance/inductance network, and the other is variable resistance analog device. Resistance, inductance, and/or capacitance are selected by iterative process; time-domain response is compared with that of real equipment to select optimal values.

B73-10306
RF TO DIGITAL CONVERTER
T. E. Flanders (GE) and G. Kosa (GE)
Sep. 1973
JSC-14419

Converter can be used for automatic spectrum analysis. Automatic gain amplifier digitizes RF amplitude, and amplifier gain is measured by binary counter. Amount of gain corresponds to signal level and is proportional to count in counter. System can be used to calculate AM and FM modulation index and other parameters of pulse-modulated FM waves.

B73-10308
INEXPENSIVE PROGRAMMABLE COMPUTER CLOCK
J. E. Vrancik
Dec. 1973 See also NASA-TM-X-2500
LEWIS-11797

Clock's computer interface accepts pulses from computer (computer commands) and translates them into control signals for clock, and vice versa. Clock is preset by computer to a fixed number of time pulses, and then started. After fixed number of time pulses has occurred, clock reads pulse (via interface) to computer and stops.

B73-10313
EXTENDED RANGE HARMONIC FILTER
H. Jankowski (GE), A. J. Geia (GE), and C. C. Allen (GE)
Dec. 1973 See also NASA-CR-120927
LEWIS-12064

Two types of filters, leaky-wall and open-guide, are combined into single component. Combination gives 10 db or greater additional attenuation to fourth and higher harmonics, at expense of increasing loss of fundamental frequency by perhaps 0.05 to 0.08 db. Filter is applicable to all high power microwave transmitters, but is especially desirable for satellite transmitters.

B73-10317
PEAK-HOLDING CIRCUIT FOR EXTREMELY NARROW PULSES
R. W. O'Neill (Lockheed Aircraft Corp.)
Sep. 1973
JSC-14129

Circuit was developed which can stretch pulses in 50- to 3200-ns range to make them acceptable for pulse-height analyzers. Circuit uses high-speed wide-band amplifier, does not need excessive frequency compensation, and can handle pulses one-tenth of width normally required by pulse analyzers.

B73-10318
SCANNING BEACON LOCATOR SYSTEM: A CONCEPT
P. W. Shores
Sep. 1973
JSC-12593

If aircraft and ships are equipped with beacons capable of communicating with satellites, rescue efforts may speed up significantly. In event of disaster, beacons can transmit distress message to satellite which, in turn, will relay message to nearest rescue center, indicating distress location.

B73-10321
ELECTRO-OPTICAL DEVICE FOR MONITORING WIRE SIZE
E. E. Burcher and W. L. Kelly, IV
Oct. 1973
LANGLEY-11358

Device recognizes variations in wire size and is being used during computer memory-plane fabrication. Decrease in wire diameter, due to stretching, permits removal of wire from memory-plant mold. Monitoring provides means of detecting imperfect wire and permits fabrication of computer memory plane to be stopped prior to its insertion into mold.

B73-10323
SYNCHRONOUS TEN-MEGABIT BIPHASE DETECTOR
L. Balliet (IBM)
Oct. 1973
M-FS-22546

Synchronous phase-lock-loop detector accepts distorted input and generates jitter-free clock. Data-detection circuitry takes advantage of this clock and employs integrate-and-dump decision circuit to provide near-theoretically ideal data decoding.

B73-10327
LASER SCANNER FOR TESTING SEMICONDUCTOR CHIPS
T. C. Hall (Hughes Aircraft Co.)
Oct. 1973
M-FS-22693

Individual "fingerprint" signals are produced when system photoexcites chips. "Fingerprints" are analyzed for characteristics associated with defects, including many not visible to the naked eye. Electromagnetic radiation photogenerates free electrons and holes in semiconductor chip. These carriers produce electrical signals at terminals. Signals vary depending on what defects are present.

B73-10331
ISOLATED OUTPUT FOR CLASS-D dc AMPLIFIERS
M. A. Honnel (Auburn Univ.) and J. K. Newell (Auburn Univ.)
Sep. 1973
M-FS-21616

Transformer-coupled output stage is used with pulse-width modulated class-D dc amplifiers. Circuit is comprised of two channels corresponding to negative and positive input signals. Amplitude of secondary-current triangular pulse is function of duration of driving pulse. Therefore, circuit converts pulse-width modulated driving signal to pulse-amplitude modulated signal.

B73-10334
ACTIVE TUNING CIRCUIT
L. L. Kleinberg
Oct. 1973
GSFC-11340

Low-cost, inductorless, high Q active-tuning circuit can be made by coupling pair of transistors and their supporting circuitry

to take advantage of frequency dependent energy storage effects. Circuit may be manufactured by standard micro-electronic techniques; has very low noise factor; and input-output matching networks are not necessary.

B73-10337
DIGITAL SERVO CONTROLLER BEHAVES LIKE SYNCHRO
 F. Byrne
 Oct. 1973
KSC-10769

Encoder has been used for years to measure accurately positional parameters of controlled devices with very high accuracy and reliability. Digital control system has been designed using digital shaft angle encoders.

B73-10342
SINGLE-CHANNEL DIGITAL COMMAND-DETECTION SYSTEM
 C. C. Carl, L. A. Couvillon, R. M. Goldstein, E. C. Posner, and R. R. Green
 Aug. 1973
NPO-11302

System, fabricated of highly-reliable digital logic elements, operates on binary pulse-code-modulated signals and derives internal synchronization from data signal. All-digital implementation of detector develops synchronization from data signal by computer cross-correlation of command modulation signal with its expected forms in sequence and adjusts detector phases in accordance with correlation peaks.

B73-10343
AUTOMATIC CARRIER ACQUISITION SYSTEM FOR PHASE-LOCK-LOOP RECEIVERS
 R. C. Bunce
 Aug. 1973
NPO-11628

Programmable oscillator and zero-beat detector acquires phase-lock of carrier by frequency scanning. Generation of high-level dc pulse at instant of zero crossing provides positive trigger for decision gate to stop search and close loop for phase-coherent tracking.

B73-10345
IMPROVED NOISE-ADDING RADIOMETER FOR MICROWAVE RECEIVERS
 P. D. Batelaan, C. T. Stelzried, and R. M. Goldstein
 Aug. 1973
NPO-11706

Use of input switch and noise reference standard is avoided by using noise-adding technique. Excess noise from solid state noise-diode is coupled into receiver through directional coupler and square-wave modulated at low rate. High sensitivity receivers for radioastronomy applications are utilized with greater confidence in stability of radiometer.

B73-10352
SAFETY MONITORING SYSTEM FOR RADIOISOTOPE THERMOELECTRIC GENERATORS
 A. Zoltan
 Aug. 1973
NPO-13285

System alerts personnel of hazards which may develop while they are performing tests on radioisotope thermoelectric generator (RTG). Remedial action is initiated to minimize damage. Five operating conditions are monitored: hot junction temperature, cold junction temperature, thermal shroud coolant flow, vacuum in test chamber, and alpha radiation.

B73-10353
LASER ENERGY CONVERTED INTO ELECTRIC POWER
 K. Shimada
 Aug. 1973
NPO-13308

Apparatus verifies concepts of converting laser energy directly into electric energy. Mirror, placed in beam and inclined at angle to it, directs small amount of incident radiation to monitor which establishes precise power levels and other beam characteristics.

Second mirror and condensing lens direct bulk of laser energy into laser plasmadynamic converter.

B73-10354
PROCESSOR FOR HIGH-DENSITY DIGITAL TAPE-RECORDED SIGNALS
 J. C. Ashlock
 Aug. 1973
NPO-11399

Linear filter and detection theory can bear on problem of reconstructing recorded bit stream. Problem can be taken from realm of nonlinear problems even though basic record process is still recognized as highly nonlinear. Digital tape recorder can be modeled as particular type of linear communication channel with intersymbol interference.

B73-10355
DIGITAL SLOPE-THRESHOLD DATA COMPRESSOR
 T. O. Anderson
 Aug. 1973
NPO-11630

Slope-threshold compression scheme for telemetered video data is efficient, and its principle of operation is as follows: when slope of raw data exceeds threshold decision reference, previous sample is transmitted. All-digital design is more economical than analog system. It exhibits well-defined accuracy, provides unlimited storage time, and is convenient and reliable.

B73-10361
AUTOMATIC FOCUS CONTROL FOR FACSIMILE CAMERA
 A. R. Sinclair, S. J. Katzberg, and E. E. Burcher
 Oct. 1973
LANGLEY-11213

Focus control performs function of automatically focusing facsimile camera throughout object field being scanned. It does this by determining and adjusting focus of imaging sensor accordingly. Since facsimile camera images a scene by scanning discrete strips, it is possible to have entire three-dimensional scene in perfect focus at point of imaging by use of focus control.

B73-10365
PULSE STRETCHER FOR NARROW PULSES
 R. S. Lindsey, Jr. (Lockheed Electronics Co.)
 Oct. 1973
JSC-14130

Pulse stretching circuit can linearly stretch pulses as narrow as 50 nanoseconds and block incoming pulses following accepted input pulse until processing has been completed. It also removes baseline distortion by being completely direct coupled and provides monitor output which measures true number of input events that exceed predetermined threshold.

B73-10367
PROGRAMMABLE RANDOM INTERVAL GENERATOR
 R. S. Lindsey, Jr. (Lockheed Electronics Co.)
 Oct. 1973
JSC-14131

Random pulse generator can supply constant-amplitude randomly distributed pulses with average rate ranging from a few counts per second to more than one million counts per second. Generator requires no high-voltage power supply or any special thermal cooling apparatus. Device is uniquely versatile and provides wide dynamic range of operation.

B73-10370
ALPHANUMERIC CHARACTER GENERATOR FOR OSCILLOSCOPE
 D. C. Lockerson and R. E. Boston
 Oct. 1973
GSFC-11582

Compact portable alphanumeric display device can be used with any general-purpose externally-triggered oscilloscope without need for Z-axis modulation. Factors limiting size of display are: output line capacitance, read-only memory speed, and persistence of cathode-ray-tube.

02 ELECTRONIC/ELECTRICAL SYSTEMS

B73-10382 DATA COMPRESSION BY A DECREASING SLOPE-THRESHOLD TEST

L. Kleinrock
Sep. 1973
NPO-10769

Resolution can be obtained at large compression ratios with method for selecting data points for transmission by telemetry in television compressed-data system. Test slope of raw data stream and compare it to symmetric pair of decreasing thresholds. When either threshold is exceeded, data are sampled and transmitted; thresholds are reset, and test begins again.

B73-10389 METER CIRCUIT FOR TUNING RF AMPLIFIERS

J. E. Longthorne
Sep. 1973
NPO-11865

Circuit computes and indicates efficiency of RF amplifier as inputs and other parameters are varied. Voltage drop across internal resistance of ammeter is amplified by operational amplifier and applied to one multiplier input. Other input is obtained through two resistors from positive terminal of power supply.

B73-10392 ANKYLOSIS-STABILIZED OSCILLATOR

L. L. Kleinberg
Oct. 1973
GSFC-11513

One feature of this mechanism is reduction of self-modulation, a source of harmonic generation. Since amplitude of oscillation is large, cutoff frequency is varied in proportion to the amplitude and frequency of oscillation. While one transistor is experiencing a positive alteration, the other is experiencing a negative alteration. Net effect is reduction in self-modulation.

B73-10401 VECTORCARDIOGRAM

M. Costello (Martin Marietta Corp.)
Nov. 1973
JSC-14427

System measures electrocardiographic potentials to produce precise quantitative measurement of changes that occur in individual's cardiac function. System is rugged, built to sustain extremes of temperature, pressure, humidity, shock, and vibration. It can also be used in pure oxygen environment without danger of combustion.

B73-10408 LOGIC CONTROLLED SOLID STATE SWITCHGEAR

E. Buchanan (Martin Marietta Corp.) and D. Waddington
Dec. 1973 See also NASA-CR-121140
LEWIS-12044

Logic controlled solid state circuit breakers and power transfer switches have been designed and built to demonstrate their use for 270 V dc power systems. This switchgear provides remote operation, automatic current level, and operates several orders of magnitude faster with much greater accuracy of response than conventional switchgear.

B73-10410 COMBINED DIPLEXER AND HARMONIC FILTER

C. C. Allen (GE)
Dec. 1973 See also NASA-CR-120927
LEWIS-12059

By using two directional filters having circular waveguide filter cavities, diplexing and harmonic filtering functions can be combined into a more compact integrated waveguide assembly. Device is filter which passes power within its pass band limits, but also has a directional characteristic so power transmitted into two-port output waveguide will travel in only one direction.

B73-10411 LOW-COST CLEARANCE INDICATOR FOR HIGH SPEED TURBOMACHINERY

R. C. Evans, D. J. Lesco, A. B. McLachlan, and F. A. Dellatorre
Dec. 1973

LEWIS-12128

System consists of hermetically sealed capacitance probe, compact electronic driver, power supply, and oscilloscope and/or voltmeter for readout. System requires no mechanical connection to the rotating parts of turbomachinery, and does not disrupt rotor mainstream flow pattern. It can be effectively used in other applications to measure dynamic clearances between moving and stationary parts.

B73-10425 FLARED-CONE TURNSTILE ANTENNA

T. G. Gavrillis (Martin Marietta Corp.) and D. J. Bottoms (Martin Marietta Corp.)
Dec. 1973
LANGLEY-10970

Antenna could be used in any application where increased ultrahigh frequency beamwidth is desired. Possible applications include aircraft, communication links, ground omniranges, and satellites. It is also possible that antenna could be adapted for use in television transmission and receiving.

B73-10426 RF ANTENNA-PATTERN VISUAL AIDS FOR FIELD USE

J. H. Williams
Dec. 1973
KSC-10821

Series of plots must be made of antenna pattern on polar-coordinate sheet depicting vertical planes. Separate sheets are plotted depicting antenna patterns in vertical plane at azimuth positions. After all polar plots are drawn, they are labeled according to their azimuthal positions. Transparencies are then stiffened with regular wire, cardboard, or molded plastic.

B73-10431 TELEVISION NOISE-REDUCTION DEVICE

J. C. Stamps and B. L. Gordon (Taft Broadcasting Corp.)
Dec. 1973
JSC-12607

System greatly improves signal-to-noise ratio with little or no loss in picture resolution. By storage of luminance component, which is summed with chrominance component, system performs mathematical integration of basically-repetitive television signals. Integration of signals over interval of their repetition causes little change in original signals and eliminates random noise.

B73-10449 DATA-MATCHED FILTER

N. R. Scheinberg (RCA) and D. Hampel (RCA)
Feb. 1974
JSC-14264

After amplification and normalization, incoming data bits are fed, alternately, to pair of integrators. While one integrator is operating, content of other is on hold, sample, and dump. Clock derived in bit-timing extractor times and controls integrators. Frequency of clock is one-half data rate.

B73-10451 HIGH-POWER MICROSTRIP SWITCH

S. D. Choi
Mar. 1974
NPO-11965

Switch, which uses only two p-i-n diodes on microstrip substrate, has been developed for application in spacecraft radio systems. Switch features improved power drain, weight, volume, magnetic cleanliness, and reliability, over currently-used circulator and electromechanical switches.

B73-10452 MEANS FOR MAPPING RADIATED FIELDS AND FOR MEASURING DIFFERENTIAL MOVEMENT OF ANTENNA ELEMENTS

C. C. Lundy
Jan. 1974
NPO-13053

Null seeking system uses two transponders located at selected points on dish to detect phase-front of received signal. One

signal line has continuously variable phase shifter driven by reversible stepmotor. Each of two transponders on dish is a dipole with mixer crystal between elements. Crystal is driven, in turn, by 181.6MHz signal carried by miniature coaxial cable.

B73-10454
PROBES FOR MEASURING NOISE CURRENT IN AN ELECTRONIC CABLE

C. C. Lundy
 Feb. 1974

NPO-13123

Electromagnetic interference in deep-space network receiver is often caused by stray coupling from power lines. These stray signals create potential differences between ground terminals, which leads to excessive noise in receiver circuits. Pair of probes detect and measure noise currents in conductors.

B73-10460
COMBINED SUN-ACQUISITION AND SUN GATE-SENSOR SYSTEM FOR SPACECRAFT ATTITUDE CONTROL

L. F. Schmidt
 Jan. 1974

NPO-13051

Arrangement combines acquisition and gate functions and reduces sensitivity so that attitude control is effective regardless of changes in solar intensity. There are five photoconductive detectors all electrically interconnected. Detectors are so positioned that, regardless of spacecraft orientation at any instant of interest, at least one detector is illuminated.

B73-10467
VERSATILE, ANALOG-TO-DIGITAL, POWER-REGULATOR CONTROLLER

W. T. McLyman
 Mar. 1974

NPO-13178

Power controller uses digital techniques to vary duty ratio of switching-type power regulators. Duty ratio is adjusted by comparing error signal with ramp voltage signal. As compared to previously-used switching regulators, controller uses fewer components and no magnetics and is readily adaptable to thick-film technology.

B73-10479
INPUT-OUTPUT, EXPANDABLE-PARITY NETWORK

J. F. McKevitt, III (Hughes Aircraft Co.)

Mar. 1974

HQ-10728

Large-scale integrated circuit generates and checks parity of four eight-bit registers. In addition, circuit will indicate by output signal whether parity error exists. Circuit can also generate or check parity of words up to 32 bits. This is done by making appropriate internal wiring connections on the large-scale integrated chip.

B73-10480
PSEUDOTACHOMETER FOR MOBILE METABOLIC ANALYZER

J. R. Currie
 Mar. 1974

M-FS-22909

Metabolic analyzer determines a patient's walking or ambulation speed and simultaneously measures his metabolic parameters. Analyzer is designed to move at some preselected human ambulation speed. During test, patient is connected to system and follows analyzer closely while his metabolic data is being monitored.

B73-10486
RECHARGEABLE, SILVER-ZINC BATTERY CONDITIONER/MONITOR UNIT AND STATE-OF-CHARGE INDICATOR

C. E. Thomas (Chrysler Corp.)
 Mar. 1974

M-FS-22835

Unit automatically charges batteries to desired state-of-charge levels, monitors functional battery parameter data both on meters and printer, and automatically activates alarm in event

of battery malfunctions. Unit consists of state-of-charge indicator panel, control panel, monitor panel, power panel, charging-current power supply, and load panel.

B73-10487
BINARY-SELECTABLE DETECTOR HOLDOFF CIRCUIT

K. A. Kadmas

Mar. 1974

M-FS-22898

High-speed switching circuit protects detectors from sudden, extremely-intense backscattered radiation that results from short-range atmospheric dust layers, or low-level clouds, entering laser/radar field of view. Function of circuit is to provide computer-controlled switching of photodiode detector, preamplifier power-supply voltages, in approximately 10 nanoseconds.

B73-10491
SUBMINIATURE MICROPOWER DIGITAL RECORDER

R. M. Goodman (The Franklin Inst. Res. Labs.) and R. W. Pitman (The Franklin Inst. Res. Labs.)

Dec. 1973

ARC-10746

High-density digital data, collected periodically or randomly from multiplicity of sensors, are recorded by subminiature recorder. Magnetic recording head is energized with suitable pulsatile signals to reverse polarization on magnetically-sensitive tape while tape is immobilized at recording head. Prior to next recording, set tape so new area of tape is at recording head.

B73-10499
STEREOSCOPIC TELEVISION SYSTEM

J. L. Jones

Dec. 1973

ARC-10160

In this system, both left and right optical images pass through same set of optical lenses and same TV transmission and receiving systems. Transmitted stereo images are of high quality because differences in image tone and gray scales, disparities in relative focusing and magnification, and nonsimilar distortions produced by electrical and optical imperfections are minimized.

B73-10500
IMPROVED 135.6-MHz ANTENNA

E. H. Gross

Dec. 1973

ARC-10743

Commercially available four-element array can be readily modified to receive 135.6-MHz signals. Directivity of each of the four elements is improved by lengthening them, repositioning feed elements, and changing total element-to-element spacing in both planes.

B73-10506
TRUE AIRSPEED MEASURED BY AIRBORNE LASER DOPPLER VELOCIMETER

R. Munoz, H. W. Mocker (Honeywell Inc.), and L. E. Koehler (Honeywell Inc.)

Dec. 1973

ARC-10763

Velocimeter utilizing carbon dioxide laser measures true airspeed of aircraft. Results of flight tests indicate that clear-weather airspeeds can be measured with accuracy better than 0.1% at altitudes up to 3000 meters; measurements can be made at much greater altitudes in cloudy or turbid air.

B73-10510
AUTOMATIC PCM GUARD-BAND SELECTOR AND CALIBRATOR

T. T. Noda (New Mexico State Univ.)

Mar. 1974

KSC-10812

Automatic method for selection of proper guard band eliminates human error and speeds up calibration process. There is also an option which allows a single channel to be calibrated, independently of other channels. Entire system is designed on

02 ELECTRONIC/ELECTRICAL SYSTEMS

3- by 4-inch printed-circuit cards and may be used with any pulse code modulation system.

B73-10511

DIGITAL TRANSMITTER FOR DATA BUS COMMUNICATIONS SYSTEM

G. E. Proch (Lockheed Electronics Co.)

Mar. 1974

JSC-14558

Digital transmitter designed for Manchester coded signals (and all signals with ac waveforms) generated at a rate of one megabit per second includes efficient output isolation circuit. Transmitter consists of logic control section, amplifier, and output isolation section. Output isolation circuit provides dynamic impedance at terminals as function of amplifier output level.

B73-10513

ISOLATED TRANSFER OF ANALOG SIGNALS

T. Bezdek (Martin Marietta Corp.)

Mar. 1974

LANGLEY-11312

Technique transfers analog signal levels across high isolation boundary without circuit performance being affected by magnetizing reactance or leakage inductance. Transfers of analog information across isolated boundary are made by interrupting signal flow, with switch, in such a manner as to produce alternating signal which is applied to transformer.

B73-10514

EYE-CONTROLLED "TELETYPEWRITER"

J. D. Holt, L. D. Leavitt, and H. D. Bowen (LTV Aerospace Corp.)

Mar. 1974

LANGLEY-11564

Oculometer provides dynamic measurement of subject's look direction, and its outputs can be used to generate visual display of his look pattern and/or to cause equipment operation associated with his lookpoint at given times. Measured eye-direction information could be used as control input at man/machine interface.

B73-10525

VARIABLE-FREQUENCY INVERTER CONTROLS TORQUE, SPEED, AND BRAKING IN ac INDUCTION MOTORS

F. J. Nola

Mar. 1974

M-FS-22088

Dc to ac inverter provides optimum frequency and voltage to ac induction motor, in response to different motor-load and speed requirements. Inverter varies slip frequency of motor in proportion to required torque. Inverter protects motor from high current surges, controls negative slip to apply braking, and returns energy stored in momentum of load to dc power source.

B74-10004

SELF-HEALING FUSE

N. D. Jones (GE), R. E. Kinsinger (GE), and L. P. Harris (GE)

Mar. 1974 See also NASA-CR-121244

LEWIS-11964

Fast-acting current limiting device provides current overload protection for vulnerable circuit elements and then re-establishes conduction path within milliseconds. Fuse can also perform as fast-acting switch to clear transient circuit overloads. Fuse takes advantage of large increase in electrical resistivity that occurs when liquid metal vaporizes.

B74-10021

DATA PROCESSOR WITH CONDITIONALLY SUPPLIED CLOCK SIGNALS

R. J. Lesniewski

Apr. 1974

GSFC-10975

Parallel data processor clock pulses are conditionally supplied to processing unit in response to relative values of binary bit of control source and binary bit derived on single lead. Use of single lead simplifies fabrication of large-scale integrated networks.

B74-10024

TRAFFIC CONTROL SYSTEM AND METHOD

C. R. Laughlin, R. C. Hollenbaugh, and W. K. Allen

Apr. 1974

GSFC-10087

Frequency of carrier received by aircraft is measured and compared with reference to indicate magnitude of Doppler shift. One Doppler frequency range is selected and indicated by digital signal. Difference between frequency is offset of apparent carrier frequency transmitted by aircraft.

B74-10025

LOW-DISTORTION RECEIVER FOR BILEVEL, BASEBAND PCM WAVEFORMS

G. E. Proch (Lockheed Electron. Co.)

Apr. 1974

MSC-14557

Digital receiver improves discrimination between information signals and noise and provides order to magnitude reduction in systematic distortion. Receiver combines advantages of band-limiting prefilter and high-amplitude thresholds to provide asynchronous discrimination between information signals and spurious signals.

B74-10035

HIGH Q BAND-PASS RESONATORS UTILIZING COMPOSITE BAND-STOP RESONATOR PAIRS

H. C. Okean (AIL Div., Cutler-Hammer Corp.)

Jul. 1974

GSFC-10990

Resonator pairs are formed of composite series- or parallel-connected transmission-line elements, which are exclusively quarter-wavelength half-wave-length lines. Resonator elements are constructed with microstriplines in parallel planes separated by dielectric. Striplines of coaxial transmission lines can be used in construction also.

B74-10041

VARIABLE-BEAMWIDTH ANTENNAS

R. F. Schmidt

Jul. 1974

GSFC-11760

Two effective designs have been developed for Cassegrain and Gregorian antenna configurations. Each provides for both high-gain and low-gain operations. Cassegrain system sacrifices some efficiency due to small amount of increased spillover loss. Gregorian system provides for independent spillover control with two feeds.

B74-10050

HIGH-DIRECTIVITY ACOUSTIC ANTENNA

H. M. A. EL-Sum (EL-Sum Consultants)

May 1974 See also NASA-CR-114636

ARC-10789

Acoustic antenna with unique electronic steering control is used to identify and define aerodynamic noise sources in free field, particularly in wind tunnel which is quite reverberant. Provision is made for high directivity as well as improved discrimination against unwanted background noise such as reverberation or echoes.

B74-10078

FAIL-SAFE FIRE DETECTION SYSTEM

E. T. Bloam

Aug. 1974

LEWIS-12238

Fire detection control system continually monitors its own integrity, automatically signals any malfunction, and separately signals fire in any zone being monitored. Should be of interest in fields of chemical and petroleum processing, power generation, equipment testing, and building protection.

B74-10083

ELECTRONIC HIGH PASS FILTER

V. S. Peterson and I. G. Hansen

Aug. 1974

LEWIS-11600

Ultra accurate filter is used with static type pressure transducers where it is desirable to extract low frequency dynamic signals from combined static and dynamic signal. System can be calibrated at any time with dc voltages.

B74-10086

A LOW COST "AIR MASS 2" SOLAR SIMULATOR

K. Yass, H. B. Curtis, and P. Harlamert, Jr.
Sep. 1974 See also NASA-TM-X-3059

LEWIS-12266

Tungsten halogen projection lamps have integral ellipsoidal reflector, and hexagonal shaped plastic Fresnel lenses. Reflector is dichroic coated to reduce infrared content of reflected radiation. Array of lamps and lenses produces uniform collimated beam having near AM2 spectrum and intensity that can be used for testing flat plate solar collectors.

B74-10088

TIME-CONTROL SYSTEM FOR COMMUNICATION BETWEEN DATA-COLLECTION AND ORBITING

C. W. Kurvin (Radiation, Inc.)

Aug. 1974

GSFC-11182

Platform design includes timers which limit data transmission to times when satellites are within radio communication range. As result of reduced power requirement, data-collection platforms now can be equipped with significantly lighter battery packages.

B74-10093

GENERALIZED CURRENT DISTRIBUTION RULE

M. A. Tapia (Ga. Inst. of Tech.)

Aug. 1974

LANGLEY-11565

Method helps determine branch current in parallel-series network in relation to total input current by inspection. Method is particularly useful for circuits with many elements when branch elements are described as admittances. If element values are variables, then these values may be expressed as admittances to find currents readily in desired branches.

B74-10097

POCKET-SIZE MICROWAVE RADIATION HAZARD DETECTOR

R. B. Kolbly

Aug. 1974

NPO-11461

Inexpensive lightweight unit is easily carried in coat pocket or attached to belt, detector sounds alarm in presence of dangerous microwave radiation levels. Unit consists of antenna, detector, level sensor, keyed oscillator, and speaker. Antenna may be single equiangular spiral or set of orthogonal slot dipoles. Signal detector is simple diode in small package.

B74-10098

FREQUENCY DISCRIMINATOR/PHASE DETECTOR

R. B. Crow

Aug. 1974

NPO-11515

Circuit provides dual function of frequency discriminator/phase detector which reduces frequency acquisition time without adding to circuit complexity. Both frequency discriminators, in evaluated frequency discriminator/phase detector circuits, are effective two decades above and below center frequency.

B74-10099

FACILITY FOR TESTING SOLAR CELLS

R. K. Yasui

Aug. 1974

NPO-11761

Primary components of facility are test chamber and external solar simulator. Voltage-current performance characteristics of solar cells at various combinations of temperature and light intensity are plotted on X-Y recorder. Data are fed into computer for calculation of maximum power, curve shape factor, cell efficiency, and averages of each parameter.

B74-10104

THIRD-ORDER PHASE-LOCKED LOOP RECEIVER

R. B. Crow and R. C. Tausworthe

Aug. 1974

NPO-11941

Third-order extension to present second-order systems extends their Doppler tracking capabilities. It widens receiver pull-in range, decreases pull-in time, lowers voltage-controlled oscillator (VCO) noise (determining when no signal is present), and lessens susceptibility to VCO drift.

B74-10106

TEMPERATURE COMPENSATION OF DIGITAL INERTIAL SENSORS

P. J. Hand

Aug. 1974

NPO-13044

Heaters for thermal stabilization are unnecessary when analog dc voltage provided by gyroscope temperature sensor is used to change outputs to compensate for temperature variations. Sensor is normally installed on all precision gyroscopes.

B74-10109

FAST SIGNAL AVERAGER

T. N. Cornsweet (Stanford Res. Inst.)

Aug. 1974

ARC-10090

Electron beam of cathode ray tube with fast phosphor is intensity-modulated by input signal to produce repetitive horizontal trace of luminous intensity proportional to time-varying signal strength. Horizontal trace of cathode ray tube occurs so repetitive portion of signal of interest is encompassed within its length.

B74-10115

ANALYSIS OF ORBITAL HEAT TRANSFER

T. Buna (Martin Marietta Corp.)

Aug. 1974

ARC-10842

Radar mapping of planets can be accomplished at lower cost and with reduced emphasis on propulsion system capability from spacecraft operating in elliptical orbit than from circular orbit.

B74-10137

ANTI-MULTIPATH DIGITAL SIGNAL DETECTOR

J. H. Painter

Sep. 1974

LANGLEY-11379

Detector operates in conjunction with radio frequency portion of receiver to detect digital signals transmitted in known modulation formats. Signal is constructed by assigning known and distinct modulation waveforms to sequence of message symbols. It reconstructs transmitted digital sequence with minimum probability that any reconstructed digit will be in error.

B74-10142

MAGNETOMETER WITH MINIATURE TRANSDUCER AND AUTOMATIC TRANSDUCER SCANNING APPARATUS

R. A. Breckenridge, W. J. Debnam, Jr., C. L. Fales, and A. V. Pohm (Iowa State Univ.)

Sep. 1974

LANGLEY-11617

Magnetometer is simple to operate and has fast response. Transducer is rugged and flat and can measure magnetic fields as close as 0.08 mm from any relatively flat surface. Magnetometer has active region of approximately 0.64 by 0.76 mm and is capable of good spatial resolution of magnetic fields as low as 0.02 Oe (1.6 A/m).

B74-10147

ERROR-CORRECTING CODES FOR HIGH-SPEED DIGITAL COMPUTERS

R. D. Campbell (Sperry Rand Corp.)

Sep. 1974

M-FS-22887

02 ELECTRONIC/ELECTRICAL SYSTEMS

Published document discusses method for correcting errors. According to this method, computer operation becomes fault-tolerant, i.e., its operation is error-free in spite of single hardware element malfunction. Also, method provides for detection and correction of repetitive and spurious processing and transmission errors.

B74-10150

CLOSED-CIRCUIT-TELEVISION WELDING-ELECTRODE GUIDANCE SYSTEM

H. E. Smith, D. L. Stephens, R. A. Taylor, W. A. Wall, R. M. Avery, and H. P. Wunsch (Hayes Intern. Corp.)

Sep. 1974

M-FS-23026

Closed-circuit TV camera is mounted parallel to electrode and moves along with it. Camera is scanned along seam so seam is viewed parallel with scan lines on TV monitor. Two fiber optics illuminators are attached to guidance system; they illuminate seam for TV camera.

B74-10158

IMPROVED THERMAL ISOLATION FOR SUPERCONDUCTING MAGNET SYSTEMS

E. R. Wiebe

Sep. 1974

NPO-11875

Closed-cycle refrigerating system for superconductive magnet and maser is operated in vacuum environment. Each wire leading from external power source passes through cooling station which blocks heat conduction. In connection with these stations, switch with small incandescent light bulb, which generates heat, is used to stop superconduction.

B74-10162

IMPROVED CAPACITANCE MULTIPLIER CIRCUIT

A. J. Kline, Jr. (Motorola, Inc.)

Sep. 1974

NPO-11948

Circuit multiplies capacitance without increasing overall circuit gain. In addition, circuit may be designed to include lag or lead/lag transfer function and independent gain adjustment.

B74-10163

MINICOMPUTER-CONTROLLED FREQUENCY GENERATOR

R. A. Winkelstein

Sep. 1974

NPO-11962

Extremely-accurate and low-phase-noise frequency generator varies oscillator frequency as predetermined function of time. System could be used: (a) to automatically vary transmission frequencies in accordance with seasonal and diurnal changes in ionospheric conditions, (b) as automatic tuner for heterodyne receivers, or (c) as control element for phase-locked telemetry receivers.

B74-10165

ADVANCED-PRIORITY INTERRUPT MODULE

H. L. Jeane

Sep. 1974

NPO-13067

Module contains mask register, line register, primary sync register, secondary sync register, push-pop stacking register, control section, and interrupt address generator. APIM operates in conjunction with logic found in majority of minicomputers to provide fully-vectored interrupt capabilities.

B74-10170

CONTINUOUS FOURIER TRANSFORM SYSTEM

R. M. Munoz

Sep. 1974

ARC-10466

Complex digital computer is not required, only summing amplifiers and attenuators are used for transformation of signal. Continuous transform system may be used for spectrum analysis, filtering, transfer function synthesis, and communications.

B74-10171

G-LOAD INDICATOR AND WARNING DEVICE FOR AIRCRAFT

J. C. Howard

Sep. 1974

ARC-10806

Device facilitates pilot control of g-load maneuvers and provides immediate indication of g-load constraint violations. It may be used in test flights, in aircraft simulators, or in displays of performance of remotely piloted aircraft.

B74-10176

MAGNETIC-HEADING REFERENCE DEVICE

H. D. Garner

Oct. 1974 See also NASA-TN-D-7460

LANGLEY-11387

Inexpensive and reliable device is used in conjunction with fluidic-electronic wing-leveler system. Single magnetometer is placed so pilot can make adjustments in aircraft heading simply by rotating magnetometer itself.

B74-10178

WIDE DEVIATION PHASE MODULATOR

R. H. Couch, C. P. Hearn, and L. R. Wilson (LTV Aerospace Corp.)

Oct. 1974

LANGLEY-11607

Modulator produces phase-modulated waveform having high modulating linearity. Technique is inherently wideband with respect to carrier frequency and can operate over decade carrier frequency range without adjustments. Circuit performance is both mathematically predictable and highly reproducible.

B74-10191

REDUCTION OF QUANTIZATION ERROR IN MEASUREMENT OF FREQUENCY

E. J. Nossen (RCA) and E. R. Starner (RCA)

Nov. 1974

MSC-14649

Method reduces quantization errors using new digital circuit. Circuit provides very high resolution (10 to the minus 2nd power to 10 to the minus 3rd power Hz) without high-speed counters. It lends itself to microminaturization and is simple to construct. Unknown frequency is compared to standard frequency by means of zero-crossing coincidence-detecting circuit.

B74-10198

SPACECRAFT ATTITUDE DETERMINATION BY FANSCAN TECHNIQUE

H. A. Lassen (TRW Systems Group, TRW, Inc.) and J. H. Decanini (TRW Systems Group, TRW, Inc.)

Nov. 1974

ARC-10827

To determine orientation, or attitude, of spacecraft in flight relative to data-receiving antenna on earth use fanbeam antenna which is offset in angle from spin axis of spacecraft and provides fan-like radiation pattern.

B74-10250

IMPROVED CIRCULARLY POLARIZED ANTENNA

L. C. Van Atta and R. J. Mailloux

Jan. 1975

ERC-10214

Antenna includes two sets of linearly polarized elements. Each set contains slots in parallel array. Sets are mutually orthogonal and are driven in phase quadrature. By changing lengths of slots or their separations, antenna beamwidth can be changed over wide range. Similar results are achieved with dipole configuration.

B74-10276

NEGATIVE ION SPECTROMETRY FOR DETECTING NITRATED EXPLOSIVES

H. G. Boettger and J. Yinon

Jan. 1975

NPO-13082

Ionization procedure is modified to produce mainly negative ions by electron capture. Peaks of negative ions are monitored conventionally. Nitrated organic materials could be identified directly from sample sniff inlet stream by suitably modified mass spectrometer because of unique electronegativity which nitro group imparts to organic material.

B74-10277
FULL-FLOW FLUID FILTER

L. R. Toth and R. Hagler, Jr.

Jan. 1975

NPO-13118

Etched-disk filter was developed with fluid passageways in configuration which allows relatively unrestricted flow of fluid and has stagnation areas for collection of impurities. In addition, filter housing without center post was developed to improve flow characteristics.

B74-10284
TELECOMMUNICATIONS SYSTEMS DESIGN TECHNIQUES HANDBOOK

R. E. Edelson, J. R. Gilder, G. W. Garrison, A. J. Spear, P. M. Kotani, B. D. Trumpis, B. K. Levitt, C. E. Hanna, and B. Dorsch

Jan. 1975

NPO-13245

Handbook presents design and analysis of tracking, telemetry, and command functions utilized in these systems with particular emphasis on deep-space telecommunications. Antenna requirements are also discussed. Handbook provides number of tables outlining various performance criteria. Block diagrams and performance charts are also presented.

B74-10285
LOGARITHMIC-FUNCTION GENERATOR

P. R. Caron

Feb. 1975

ERC-10267

Solid-state logarithmic-function generator is compact and provides improved accuracy. Generator includes a stable multivibrator feeding into RC circuit. Resulting exponentially decaying voltage is compared with input signal. Generator output is proportional to time required for exponential voltage to decay from preset reference level to level of input signal.

B74-10288
HIGH-EFFICIENCY MULTIFREQUENCY FEED

J. S. Ajioka (Hughes Aircraft Co.), G. I. Tsuda (Hughes Aircraft Co.), and W. A. Leeper (Hughes Aircraft Co.)

Feb. 1975

GSFC-11909

Mutual blockage and mutual coupling are eliminated with multifrequency feed. Feed provides common aperture for 6-GHz and 4-GHz bands and crossed dipole for 1-GHz band. Design is highly efficient and has good polarization diversity.

B74-10296
HIGH-SPEED FAULT-TOLERANT TELEMETRY/COMPUTER INTERFACE

G. C. Gilley

Feb. 1975

NPO-13139

Fault-tolerant telemetry/computer interface allows memory sharing by two data processing systems and maintains integrity of fault-tolerant environment of computer.

B74-10299
APPARATUS FOR HEAT TREATING PLASTIC BELTS

A. Topits, Jr.

Feb. 1975

NPO-13205

Apparatus performs programed rotating, stretching/shrinking and heat treatment necessary to fabrication of high-performance plastic belts. Belts can be treated in lengths varying from 7 to 48 in., in widths up to 1 in., and in thicknesses up to approximately 0.003 in.

B74-10300
LOCATION OF VEHICLES USING AM STATION BROADCASTING SIGNALS

G. R. Hansen, Jr.

Feb. 1975

NPO-13217

Imaginary hyperbolic grid patterns formed by three local AM broadcasting stations were utilized in study. Each hyperbola is defined by constant phase difference between arbitrary signals integrally related to those coming from two stations. When three stations are used, grid is formed covering area with intersecting hyperbolas.

B75-10012
IN-SERVICE TURBINE WHEEL CRACK MONITOR

P. J. Barranger

Apr. 1975 See also NASA-TN-D-7483

LEWIS-12422

System can be utilized in flight or at flight line. It monitors disk rim for surface cracks emanating from blade root interface. System consists of eddy-current sensor, mounted approximately 1 1/2 mm (1/16 in) away from face of disk, and remotely located electrical capacitance-conductance bridge and signal analyzer.

B75-10037
FILL-IN BINARY LOOP PULSE-TORQUE QUANTIZER

C. B. Lory (Charles Stark Draper Lab., Inc.)

Apr. 1975

M-FS-23100

Fill-in binary (FIB) loop provides constant heating of torque generator, an advantage of binary current switching. At the same time, it avoids mode-related dead zone and data delay of binary, an advantage of ternary quantization.

B75-10046
MULTIBEAM-ANTENNA FEED SYSTEM TO ISOLATE ORTHOGONALLY POLARIZED BEAMS

J. E. Ohlson and W. F. Williams

Apr. 1975

NPO-13140

System is polarization tracker and comprises variable polarizer, polarization control, and receiver servo loop. System simultaneously receives desired signal and undesired signal which are approximately orthogonal. They can be either paired as left and right circular polarizations or as cross-linear polarizations.

B75-10059
BUFFER CONTROL UNIT FOR COMPUTER COMMUNICATIONS

A. K. Okinaka (Hawaii Univ.)

Apr. 1975

ARC-10870

Unit provides character echoing for keyboard display, parity and syndrome generation (error detection), half or full data-packet generation, automatic retransmission of packets, and keyboard lock-up.

B75-10068
A TEST AND MEASUREMENT TECHNIQUE FOR DETERMINING POSSIBLE LIGHTNING-INDUCED VOLTAGES IN AIRCRAFT ELECTRICAL CIRCUITS

J. A. Plumer (GE) and L. C. Walko (GE)

Jul. 1975 See also NASA-CR-2348

LEWIS-12109

Transient analyzer consists of four 0.5 microfarads capacitors chargeable by self-contained solid state 50 KV dc power supply operating from standard 110 Vac line voltage. Unit can circulate unidirectional current impulses of up to 500 amperes through aircraft at waveshapes similar to those of natural lightning strokes.

B75-10073
AUTOMATED DATA ACQUISITION AND REDUCTION SYSTEM FOR TORSIONAL BRAID ANALYZER

G. L. Carl, A. T. Inge, N. J. Johnston, and S. K. Dalal (Wyle Labs., Inc.)

May 1975

02 ELECTRONIC/ELECTRICAL SYSTEMS

LANGLEY-11578

Automated Data Acquisition and Reduction System (ADAR) evaluates damping coefficient and relative rigidity by storing four successive peaks of waveform and time period between two successive peaks. Damping coefficient and relative rigidity are then calculated and plotted against temperature or time in real time.

B75-10086

TECHNIQUES FOR DECODING SPEECH PHONEMES AND SOUNDS: A CONCEPT

D. C. Lokerson and H. G. Holby

Jun. 1975

GSFC-11898

Techniques studied involve conversion of speech sounds into machine-compatible pulse trains. (1) Voltage-level quantizer produces number of output pulses proportional to amplitude characteristics of vowel-type phoneme waveforms. (2) Pulses produced by quantizer of first speech formants are compared with pulses produced by second formants.

B75-10092

MINIATURE SONAR FISH TAG

R. W. Lovelady and R. L. Ferguson

Jun. 1975

LANGLEY-11814

Self-powered sonar device may be implanted in body of fish. It transmits signal that can be detected with portable tracking gear or by automatic detection-and-tracking system. Operating life of over 4000 hours may be expected. Device itself may be used almost indefinitely.

B75-10103

CENTRAL CONTROL ELEMENT EXPANDS COMPUTER CAPABILITY

R. A. Easton (Hughes Aircraft Co.)

Jun. 1975

M-FS-23216

Redundant processing and multiprocessing modes can be obtained from one computer by using logic configuration. Configuration serves as central control element which can automatically alternate between high-capacity multiprocessing mode and high-reliability redundant mode using dynamic mode switching in real time.

B75-10107

HIGH-EFFICIENCY K-BAND TRACKING ANTENNA FEED

R. L. Beavin (McDonnell Aircraft Co.) and A. I. Simanyi (McDonnell Aircraft Co.)

Jun. 1975 See also NASA-CR-134193

MSC-14717

Antenna feed features high aperture efficiency of multimode near-field horn and develops tracking signals without conventional monopulse bridge. Feed assembly is relatively simple and very compact. However, feed is sensitive to cross-polarized energy which couples into orthogonal error channel.

B75-10108

HIGH-POWER AC/DC VARIABLE LOAD SIMULATOR

K. P. Joncas (Avco Corp.), S. Birnbach (Avco Corp.), L. D. Bruce (Avco Corp.), and L. Smith (Avco Corp.)

Jun. 1975 See also B73-10305; NASA-CR-140331

MSC-14788

Design of medium-power dynamic electrical load simulator has been extended to permit simulation of ac as well as dc loads and to provide for operation at higher power levels. Simulator is internally protected against reverse voltage, overvoltage, overcurrent, and overload conditions.

B75-10114

QUASARS AS VERY-ACCURATE CLOCK SYNCHRONIZERS

W. J. Hurd and R. M. Goldstein

Jun. 1975

NPO-13276

Quasars can be employed to synchronize global data communications, geophysical measurements, and atomic clocks.

It is potentially two to three orders of magnitude better than presently-used Moon-bounce system. Comparisons between quasar and clock pulses are used to develop correction or synchronization factors for station clocks.

B75-10122

TRANSMITTER SWITCH FOR HIGH-POWER MICROWAVE OUTPUT

C. P. Wiggins and R. K. Leu

Jun. 1975

NPO-13439

Combiner system can be used for combining output powers of two transmitters or for switching from one to the other. This can be done when pair of transmitters operate on same frequency and carriers are phase coherent as by excitation from single exciter.

B75-10129

HIGH-SPEED DATA WORD MONITOR

M. N. Wirth

Jun. 1975

ARC-10899

Small, portable, self-contained device provides high-speed display of bit pattern or any selected portion of transmission, can suppress filler patterns so that display is not updated, and can freeze display so that specific event may be observed in detail.

B75-10136

WIND ENERGY UTILIZATION: A BIBLIOGRAPHY

Innovator not given (New Mexico Univ.) Jul. 1975

LEWIS-12518

Bibliography cites documents published to and including 1974 with abstracts and references, and is indexed by topic, author, organization, title, and keywords. Topics include: Wind Energy Potential and Economic Feasibility, Utilization, Wind Power Plants and Generators, Wind Machines, Wind Data and Properties, Energy Storage, and related topics.

B75-10150

SOLID STATE REMOTE POWER CONTROLLERS FOR 120 VDC POWER SYSTEMS

G. R. Sundberg and D. E. Baker (Westinghouse Elec. Corp.)

Oct. 1975 See also NASA-CR-134772

LEWIS-12523

Solid state remote power controllers can be applied to any dc power system up to 120 Vdc and distribute power up to 3.6 kW per hour. Devices have demonstrated total electrical efficiencies of 98.5 percent to 99.0 percent at rated load currents.

B75-10152

LOW-COST, COMPACT, COOLED PHOTOMULTIPLIER ASSEMBLY FOR USE IN MAGNETIC FIELDS UP TO 1400 GAUSS

R. W. Patch, R. A. Tashjian, and T. A. Jentner

Sep. 1975 See also NASA-TM-X-71635

LEWIS-12445

Use of vortex tube for cooling and concentric shielding have produced smaller and more compact unit than was previously available. Future uses of device could include installation in gas chromatographs and mass spectrometers. Additional uses would include measurements and controls in magnetohydrodynamic power generators and fusion reactors.

B75-10153

DIGITAL TAPE DRIVE MONITOR

R. T. McKenna

Aug. 1975

GSFC-11925

Network checks skew and character spacing of digital tape drive systems automatically. Tape drive is set up and calibrated to check any written tape when tape is read back. It will indicate track errors or character spacing errors should they exceed specifications.

**B75-10154
VOLTAGE MONITORING SYSTEM**

C. L. Canicatti
Aug. 1975
KSC-10736

System serves as central station which can monitor voltage variations through transmission lines connected to equipment scattered in different locations. Voltage-controlled oscillator is optional. It is used in some systems to condition signal to make it compatible with certain types of oscillographs.

**B75-10156
NONDESTRUCTIVE MEASUREMENT OF CAPILLARY TUBE
INTERNAL DIAMETER**

W. W. Ho (Rockwell Intern. Corp.), A. W. Love (Rockwell Intern. Corp.), and M. J. VanMelle (Rockwell Intern. Corp.)
Aug. 1975

LANGLEY-11647

Technique provides nondestructive method of making quick, accurate determination by measuring electrical resistance of capillary tube when it is filled with electrolyte of known conductivity. Apparatus consists of conductivity cell and equipment for measuring resistance and for monitoring and controlling temperature.

**B75-10161
PAGE COMPOSER TO TRANSLATE BINARY ELECTRICAL
DATA TO OPTICAL FORM**

G. A. Bailey and L. S. Cosentino (RCA)
Aug. 1975

M-FS-22589; M-FS-23173

Composer converts binary data to optical form for storage as hologram. Device consists of an array of deformable metal membranes controlled by MOSFET's. Device is fast, produces high contrast ratios, does not degrade with extended use, and can be addressed from diverse angles.

**B75-10162
ZENER-REGULATED SOLAR ARRAY/BATTERY POWER
SYSTEM**

J. T. Eliason (Sperry Rand Corp.)
Aug. 1975

M-FS-23195

Zener diode limits solar cell voltage used to charge battery. System improves life and reliability of solar cells.

**B75-10169
A HYBRID GENERAL-PURPOSE BIT SYNCHRONIZER**

J. J. Stiffler (Raytheon Co.) and A. H. VanDoren (Raytheon Co.)
Aug. 1975 See also NASA-CR-115751

MSC-14330

Synchronizer is not affected by severe noise environments. Device uses both analog and digital techniques in its tracking loop. It accommodates any one of three signal formats. Rapid acquisition sequences are used to minimize acquisition time.

**B75-10175
FAST FOURIER TRANSFORMATION COMPUTER USING
FAST COUNTERS**

S. Zohar
Aug. 1975
NPO-13110

Two designs have been developed for cost-effective, fast transformation of data points in small batches (where N is equal to or less than 32). One design is applicable to N prime and one to all N.

**B75-10180
NEW BROADBAND SQUARE-LAW DETECTOR**

M. S. Reid, R. A. Gardner, and C. T. Stelzried
Aug. 1975
NPO-13410

Compact device has wide dynamic range, accurate square-law response, good thermal stability, high-level dc output with immunity to ground-loop problems, ability to insert known time constants for radiometric applications, and fast response times compatible with computer systems.

**B75-10184
PROGRAMMED ASYNCHRONOUS SERIAL DATA INTER-
ROGATION IN A TWO-COMPUTER SYSTEM**

N. A. Schneberger (Honeywell, Inc.)
Sep. 1975

GSFC-11778

Technique permits redundant computers, with one unit in control mode and one in MONITOR mode, to interrogate the same serial data source. Its use for program-controlled serial data transfer results in extremely simple hardware and software mechanization.

**B75-10191
HIGH-VOLTAGE STEPPING SUPPLY WITH FAST SETTLING
TIME**

H. Doong and M. H. Acuna
Sep. 1975

GSFC-11844

Waveform generator is used to derive low-voltage staircase waveform that feeds relatively long response time power supply. Power supply has high output voltage that is predetermined multiple of the input voltage.

**B75-10192
VIDEO SWITCHER FOR COUPLING VIDEO CAMERAS TO
SINGLE TV MONITOR**

I. A. Richter
Sep. 1975

KSC-10782

Device couples up to 60 TV cameras to single monitor. Video switching is provided by diode matrix arranged in a 60-by-1 configuration. Switcher can be operated manually or automatically.

**B75-10204
MEASUREMENT OF TRAP DENSITY IN DIELECTRIC FILM**

J. E. Guisinger and J. Maserjian
Sep. 1975

NPO-13443

Method uses basic circuit to examine quality and trap density of film used in insulated gate field effect transistors. Data are measured as function of performance and life expectancy.

**B75-10205
REAL-TIME SPEECH ANALYZER**

J. P. Hong
Sep. 1975

NPO-13465

System uses phase-locked loops to give real-time information on speech spectrum by tracking the fundamental and its first 19 harmonics.

**B75-10215
VARIABLE-BEAMWIDTH ANTENNA WITHOUT MOVING
PARTS**

L. F. Deerkoski and R. F. Schmidt
Oct. 1975 See also B74-10041; B74-10257

GSFC-11924

Basic configuration consists of large parabolic dish reflector, smaller hyperboloidal subreflector, and two sets of monopulse feeds located in conjugate focal region on boresight axis of dish.

**B75-10217
AUTOMATED STATISTICAL ANALYSIS PROGRAM (ASAP)**

S. J. Bavuso
Oct. 1975

LANGLEY-11125

Pattern recognition subprogram is used to produce table which indicates sections of input data. Program then uses data to write set of Kirchhoff equations algebraically solved by Gauss reduction method.

**B75-10218
CONTINUOUS-PHASE FREQUENCY-SHIFT-KEYED GENER-
ATOR**

M. S. Feryszka
Oct. 1975

02 ELECTRONIC/ELECTRICAL SYSTEMS

LANGLEY-11638

Device combines features of crystal oscillator frequency stability and voltage-controlled oscillator phase continuity.

B75-10240

HIGH-ACCURACY PROGRAMABLE SQUARE-LAW DETECTOR SYSTEM

M. S. Reid, R. A. Gardner, and C. T. Stelzried

Oct. 1975 See also B75-10180

NPO-13525

Programable system introduces correction factor to compensate for detector deviation from square-law response. If detector output voltage is V , the corrected output voltage is determined as V corrected = aV squared where 'a' is correction factor. Factor is determined and used automatically with digital computer techniques.

B75-10247

THREE-PHASE DC MOTOR DECODER

P. A. Studer

Oct. 1975

GSFC-11824

Circuit minimizes components required to provide six properly timed drive signals from three equal-interval sensor inputs.

B75-10254

PORTABLE HEADSET MICROPHONE CHECKER

J. Davenport, J. A. Foster, and W. R. Langley

Oct. 1975

KSC-10699

Simple and reliable test system gives go/no-go indication of output level of headset microphones. Portable system has its own internal battery power supply and can be used in field or in laboratory with wide variety of headset types.

B75-10265

REAL-TIME VIDEO CORRELATOR

P. E. Geise (Sperry Rand Corp.), M. Petcher (Sperry Rand Corp.), and D. F. Cornwell (Sperry Rand Corp.)

Oct. 1975

M-FS-23200

Device provides two-dimensional correlation of video data. Operation is reliable, accurate, and predictable.

B75-10275

LASER-EXCITED FLUORESCENCE FOR MEASURING ATMOSPHERIC POLLUTION

R. T. Menzies

Oct. 1975

NPO-13231

System measures amount of given pollutant at specific location. Infrared laser aimed at location has wavelength that will cause molecules of pollutant to fluoresce. Detector separates fluorescence from other radiation and measures its intensity to indicate concentration of pollutant.

B75-10281

LOW-NOISE K(U)-BAND RECEIVER INPUT SYSTEM

R. W. Berwin, P. R. Dachel, and E. R. Weibe

Oct. 1975

NPO-13645

Improved maser and superconducting magnet, which operates in vacuum of closed-cycle helium refrigerator, comprise a low-noise, reliable, field-operational receiver input system.

B75-10291

DELAY-LOCK-LOOP CODE-CORRELATION SYNCHRONIZER

C. T. Pardoe (Johns Hopkins Univ.)

Dec. 1975

GSFC-11868

Temperature dependence and sensitivity to noise are greatly reduced in system designed to process biphasic-level pulse-code-modulated signals.

B75-10296

MONITOR FOR CHECKING ELECTRIC-FIELD METERS

L. D. Holley

Dec. 1975

KSC-10851

Portable monitor can be used to check electric-field meters on location. Faulty communication line or faulty unit can be determined on the spot.

B75-10297

TIME-OF-ARRIVAL LIGHTNING ACTIVITY LOCATION SYSTEM

C. L. Lennon

Dec. 1975

KSC-11006

System fixes location of charge buildup in clouds. It provides range, azimuth, and elevation in real-time so that warning of charge buildup can be implemented.

B75-10316

SOLID-STATE MOTOR CONTROL AND MONITOR SYSTEM

L. G. Monford, Jr.

Dec. 1975

MSC-12721

Compact solid-state system may be used for multifunction motor control. System can provide 12 control functions for under \$100.

B75-10323

MULTICHANNEL HIGH-SPEED CORRELATOR

T. O. Anderson

Dec. 1975

NPO-13097

Device is used in real-time signal processing system for detection of radar signals in noise.

B75-10325

SYNCHRONIZER FOR RANDOM BINARY DATA

T. O. Anderson, J. K. Holmes, and W. J. Hurd

Dec. 1975

NPO-13286

Simplified binary-data transition detector, for synchronization of relatively noise-free signals, can be used with radio or cable data-control links. It permits reception of binary data in absence of clock signal or self-clocking coder.

B75-10326

COMPUTER/COMPUTER INTERFACE

T. O. Anderson

Dec. 1975

NPO-13428

System synchronizes data transfer between two computers by generating data strobe pulses when computers are ready for data transfer. In addition, interface filters noise by sampling.

03 PHYSICAL SCIENCES

B70-10020

REINFORCEMENT OF POLYMERIC STRUCTURES WITH ASBESTOS FIBRILS

RADER, C. A. /HARRIS RES. LABS., INC./ SCHWARTZ, A. M. DATE- JUN. 1970 REAN- SEE ALSO

NASA-CR-893, NASA-CR-77225

HQ-09954 HQ-09955

Investigation determines structural potential of asbestos fibrils. Methods are developed for dispersing macrofibers of the asbestos into colloidal-sized ultimate fibrils and incorporating these fibrils in matrices without causing reagglomeration.

B70-10031

COLORIMETRIC DETECTION OF ETHYLENE GLYCOL VAPOR

HELM, C. /INST. FOR RES./ MOSIER, B. VEROSTKO,
C. E. DATE- FEB. 1970
MSC-13222

Very low concentrations of ethylene glycol in air or other gases are detected by passing a sample through a glass tube with three partitioned compartments containing reagents which successively convert the ethylene glycol vapor into a colored compound.

B70-10036

COMPACT APPARATUS FOR PHOTOGENERATION OF HYDRATED ELECTRONS

HART, E. SCHMIDT, K. DATE- JUN. 1970
ARG-10487

Flash-photolysis instrument generates hydrated electrons and studies their reactions. It has a three-dimensional, multiple-reaction cell and the capacity to produce up to .1 micromole hydrated electron in a single 40 microsec light pulse.

B70-10055

IMMERSED ULTRASONIC INSPECTION OF HIGH ACOUSTICAL ATTENUATIVE STRUCTURES

STUCKENBERG, F. H. /N. AM. ROCKWELL CORP./ DATE- MAY 1970
MSC-15702

By building a floating isolator box of cork around the test object and using a low frequency transducer, automated conventional C scan equipment is adapted to inspect the object ultrasonically. Vibrations are isolated and reflected noise is reduced.

B70-10061

HIGH-FIELD SUPERCONDUCTING NESTED COIL MAGNET

LAVERICK, C. LOBELL, G. M. DATE- JAN. 1970 REAN- SEE ALSO ANL-7002
ARG-10060

Superconducting magnet, employed in conjunction with five types of superconducting cables in a nested solenoid configuration, produces total, central magnetic field strengths approaching 70 kg. The multiple coils permit maximum information on cable characteristics to be gathered from one test.

B70-10071

COST-REDUCING MULTIPURPOSE MICROFILM CARD

SMITH, A. V. /BOEING CO./ DATE- JAN. 1970
KSC-10508

Microfilm-aperture card is printed in the same format on both sides which enables the use of one card for mounting films that are **right reading** on both the base side and the emulsion side. This reduces the number of microfilm-card formats.

B70-10085

A METHOD FOR RAPIDLY EVALUATING THE LINEARITY OF CALIBRATION DATA

BARI, F. A. N. /BOEING CO./ DATE- JUL. 1970
M-FS-14834

Simple technique determines whether or not a set of five data points lies within a specified close tolerance of a linear fit.

B70-10099

ESTIMATING SENSITIVITY OF VACUUM GAGES

SUMMERS, R. L. DATE- APR. 1970 REAN- SEE ALSO NASA-TN-D-5285
LEWIS-11007

Gage sensitivity for a particular gas is estimated using the known performance of the gage with a reference gas /nitrogen/ and employing several empirical rules which have usable accuracy. Relative gage sensitivities have been estimated for over 100 gases and vapors.

B70-10102

OPTIMIZING INSULATION WEIGHT ON CRYOGENIC STORAGE TANKS

SAFAR, L. A. /BOEING CO./ DATE- SEP. 1970
KSC-10399

Mathematical model uses boil-off rate, insulation density, tank surface area, performance level, and

mission requirements to arrive at approximate insulation requirements for cryogenic storage tanks.

B70-10106

WATER-FILLED HEAT PIPE USEFUL AT MODERATE TEMPERATURES

MC KINNEY, B. G. DATE- SEP. 1970 REAN- SEE ALSO NASA-TM-X-53849
M-FS-20543

Heat pipe is used in the primary heat exchanger for nuclear power plants, as a heat sink for high-power electronic devices, and in a closed-cycle heat rejection mechanism for cryogenic storage tanks. It serves simultaneously as a heat transfer device and as a structural member.

B70-10108

FLUID MIXING TECHNIQUE INCREASES THE GAIN AND OUTPUT POWER OF CARBON DIOXIDE LASER SYSTEMS

COOL, T. A. /CORNELL UNIV./ DATE- JUN. 1970
HQ-10389

High speed flowing gas system provides uniform mixing in short times compared to flow transit times and carbon dioxide vibrational relaxation times. This system minimizes the effects of surrounding surfaces and provides a uniformly high gain that is independent of dimensions transverse to the flow direction.

B70-10111

PASSIVE HEAT TRANSFER CONTROL

FITZ, F. A. /SOUTHERN METHODIST UNIV./ DATE- JUL. 1970
HQ-10041

Model maintains a preselected temperature in the near vicinity of a variable source of thermal energy. Heat input is controlled by a variable transformer and a voltage drop across the heater is used to calculate power dissipated.

B70-10113

PHOTOIONIZATION MASS SPECTROMETER

WARNECK, P. /GCA CORP./ DATE- FEB. 1970 REAN- SEE ALSO NASA-CR-84871
HQ-10167

Photoionization source with a vacuum UV monochromator is used in ion reaction kinetics. Monochromator passes only the photon energies near the threshold of the selected ionization process. Absence of electron impact alleviates creation of different type ions that result in ion fragmentation.

B70-10122

CONTROL OF EQUILIBRIUM PRESSURE-TEMPERATURE CONDITIONS IN CRYOGENIC STORAGE

FORD, W. /N. AM. ROCKWELL CORP./ VOSS, J. DATE- JUN. 1970
M-FS-18115

Metered vent controls the pressure within a liquid hydrogen tank. Vent size is chosen to permit a gas flow which corresponds to the boil-off rate necessary to maintain the desired bulk temperature of the cryogen.

B70-10129

STRESS CORROSION CRACK INHIBITING METHOD FOR TITANIUM

BECK, T. R. /BOEING CO./ DATE- SEP. 1970
NPO-10271

Addition of oxyanions to liquid solvents in excess of the number of chloride, bromide, or iodide ions present prevents cracking of titanium-aluminum alloys under exposure to aqueous and other solvent environments. The molar concentration of oxyanion is set from 10 to 100 times higher than concentration of halide ions.

B70-10130

ULTRA-HIGH MOLECULAR SINK VACUUM CHAMBER

STEPHENS, J. B. YAGER, S. P. DATE- JUN. 1970
NPO-10799

Double-wall vacuum chamber can be separated from the remainder of the system and pumped by ultra-clean techniques. Ultrahigh vacuum is maintained by the cryogenic effect of a cold wall and titanium chemisorption.

03 PHYSICAL SCIENCES

B70-10135

PROCEEDINGS OF THE THIRD SOUTHEASTERN
SEMINAR ON THERMAL SCIENCES
SPON- INNOVATOR NOT GIVEN /MARSHALL SPACE FLIGHT
CENTER/ DATE- NOV. 1970
M-FS-20627

Report contains papers discussing rheology, low
temperature thermodynamics with emphasis on the
helium system, aerodynamic heating, and
thermophysics research at Marshall Space Flight
Center. Abstracts of selected research and
development programs covering entire spectrum of
thermal sciences are included.

B70-10137

ULTRASONIC PROPAGATION IN GASES AT HIGH
TEMPERATURES

CAREY, C. /PANAMETRICS, INC./ CARNEVALE, E. H.
LYNNWORTH, L. C. UVA, S. DATE- SEP. 1970 REAN-
SEE ALSO AD-670192
HQ-10498

Ultrasonic pulse method /1 to 3 MHz/ measures
both sound speed and absorption in monatomic and
polyatomic gases in a temperature range of 300 to
20000 degrees K at atmospheric pressure.
Helium, nitrogen, oxygen, and argon are
investigated.

B70-10167

TEMPERATURE-CONTROLLED FLUIDIC DEVICE
A CONCEPT

REHSTEINER, P. H. /STANFORD UNIV./ DATE- NOV.
1970

HQ-10446

Symmetrical fluidic device directly converts
electrical signals to mechanical signals in the
form of a fluid-flow parameter. This device
eliminates or reduces effects of all undesirable
parameters on the departure angle, leaving it a
function of the controlled wall and jet
temperatures.

B70-10168

VAPOR FEEDING OF LIQUID METAL CATHODES

ECKHARDT, W. O. /HUGHES AIRCRAFT CO./ DATE- AUG.
1970 REAN- SEE ALSO NASA-CR-93771

HQ-10213

Modified liquid metal cathode apparatus permits
vapor feeding in the diffuse-spot pattern mode.
Vapor-fed cathode has advantages over liquid-fed
systems.

B70-10173

IMPROVED CALIBRATION OF ACCELEROMETERS AT
TEMPERATURES DOWN TO -450 DEGREES F

BUFFUM, R. D. /N. AM. ROCKWELL CORP./ DE CARLO,
T. A. PEPKINS, W. E. DATE- SEP. 1970

M-PS-18561

Improved technique calibrates piezoelectric
accelerometers throughout temperature range from
ambient to -450 degrees F. Method employs
liquid helium as coolant, a cryogenic temperature
chamber, a vibration measurement system, and a
temperature measurement system.

B70-10187

NEW MICROWAVE SPECTROMETER/IMAGER HAS
POSSIBLE APPLICATIONS FOR POLLUTION

MONITORING

TOOLEY, R. D. /NORTHROP NORTHROPICS/ DATE- OCT.
1970

NPO-10535

Microwave imager forms thermal-emissivity image of
solid portion of planet Venus and provides data
on the planet's atmosphere, surface, terminator,
and temperature changes. These thermally
produced multifrequency microwaves for image
production of temperature profiles can be applied
to water pollution monitoring, agriculture, and
forestry survey.

B70-10197

CRYOGENIC THERMOCOUPLE CALIBRATION TABLES

HALL, W. J. /INST. FOR BASIC STANDARDS, NBS/
POWELL, R. L. SPARKS, L. L. DATE- APR. 1970
NUC-10551

Thermocouple calibration standards are developed
for low-temperature thermocouple materials.
Thermovoltage, thermopower, and the thermopower
derivative are presented in tabular and graphical
form.

B70-10209

TELEVISION CAMERA AS A SCIENTIFIC
INSTRUMENT

SMOKLER, M. I. DATE- JUL. 1970
NPO-11164

Rigorous calibration program, coupled with a
sophisticated data-processing program that
introduced compensation for system response to
correct photometry, geometric linearity, and
resolution, converted a television camera to a
quantitative measuring instrument. The output
data are in the forms of both numeric printout
records and photographs.

B70-10221

COERCIVE FORCE OF THIN MAGNETIC FILMS
BALDWIN, J. A. DATE- SEP. 1970

NPO-10750

Phenomenological model aids in understanding the
mechanisms responsible for the easy-axis coercive
force in thin magnetic films of NiFe, MnBi,
and gadolinium iron garnet.

B70-10223

USE OF THERMODYNAMIC PROPERTIES OF
METAL-GAS SYSTEMS AS LOW-PRESSURE STANDARDS

LUNDIN, C. E. /DENVER RES. INST./ DATE- AUG.
1970 REAN- SEE ALSO NASA-CR-1271

LANGLEY-10452

Modified version of Sievert's apparatus
accurately calibrates low pressure measuring
instruments. Metal-gas system is composed of
hydrogen in two-phase equilibrium with erbium to
obtain reproducible hydrogen pressures.

B70-10226

DIFFUSION FILTER ELIMINATES FRINGE EFFECTS
OF COHERENT LASER LIGHT SOURCE

OLSASKY, M. J. /N. AM. ROCKWELL CORP./ DATE-
SEP. 1970

NPO-10417

Diffusion filter comprised of small particles in
colloidal suspension reduces the coherence of a
laser beam used as a photographic light source.
Interference patterns which obscure details in
photographic film are eliminated, the intensity
and collimation are moderately affected.

B70-10231

COMBINING MICRO DRY COLUMN CHROMATOGRAPHY
AND MASS SPECTROMETRY

BAUMAN, A. J. DATE- NOV. 1970

NPO-11240

Dry column chromatography principles applied in
microscale produce technique to minimize time in
preparing and analyzing colorless constituents of
soluble mixtures. Glass pipette microcolumns
filled with finely sieved adsorbents permit
capillary attraction and separation in 3 to 15
minutes. Technique is adaptable to gas
chromatography.

B70-10240

NEUTRON-IMAGE INTENSIFIER

BERGER, H. DATE- APR. 1970

ARG-10249

Electronic intensifier tube with a demagnification
ratio of 9-1 enhances the usefulness of
neutron-radiographic techniques. A television
signal can be obtained by optical coupling of a
small-output phosphor-light image to a television
camera.

B70-10256

SHORT-DURATION, TRANSONIC FLOW,
VARIABLE-POROSITY TEST SECTION

03 PHYSICAL SCIENCES

DAVIS, J. W. HILL, O. E. DATE- SEP. 1970 REAN-
SEE ALSO NASA-TM-X-53571
M-FS-20509

Short-duration test facility obtains extremely high Reynolds number flows in subsonic, transonic, and supersonic speed ranges, and aids in solving Reynolds number-dependent aerodynamic and thermodynamic problems in design and testing of large, high speed vehicles. The modified blowdown wind tunnel avoids data confusion and aerodynamic noise.

B70-10260
METHODS FOR MEASURING THE LOUDNESS AND NOISINESS OF COMPLEX SOUNDS

KRYTER, K. /BOLT, BERANEK, AND NEWMAN, INC./
DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-422
HQ-10332

Physical and temporal aspects of sound which influence the rating of subjective noisiness are intensity, spectrum shape and bandwidth, spectral complexity, and duration. Objective rating methods include a graphic method, full octave and one-third octave methods, and methods that measure one value over all frequencies.

B70-10268
THE EFFECT OF OBJECT MOTION IN FRAUNHOFER HOLOGRAPHY WITH APPLICATION TO VELOCITY MEASUREMENTS

DOTSON, W. P., JR. DATE- SEP. 1970 REAN- SEE
ALSO NASA-TN-D-5515
MSC-12295

Experimental results extend the Fraunhofer holography theory to include moving objects. Conclusions indicate objects may move up to ten times their mean diameter during observation time. Their motion produces fringe patterns descriptive of that motion from which it is possible to reconstruct the hologram and measure the velocity.

B70-10269
MAGNESIUM OXIDE DOPING REDUCES ACOUSTIC WAVE ATTENUATION IN LITHIUM METATANTALATE AND LITHIUM METANIOPATE CRYSTALS
CROFT, W. /SPERRY RAND RES. CENTER/ DAMON, R. KEDZIE, R. KESTIGIAN, M. SMITH, A. WORLEY, J.
DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-86145
ERC-10463

Single crystals of lithium metatantalate and lithium metaniopate, grown from melts having different stoichiometries and different amounts of magnesium oxide, show that doping lowers temperature-independent portion of attenuation of acoustic waves. Doped crystals possess optical properties well suited for electro-optical and photoelastic applications.

B70-10270
MANUALLY OPERATED ELASTOMER HEAT PUMP
HUTCHINSON, W. D. DATE- JUL. 1970
NPO-10677

Device consisting of a rotating mechanism, a frame with multiple wide bands of rubber, and a fluid bath, demonstrates the feasibility of a human operated device capable of cooling or producing heat. This invention utilizes the basic thermodynamic properties of natural rubber.

B70-10271
FINITE FRINGE HOLOGRAM
HEPLINGER, L. O. /TRW SYSTEMS GROUP/ DATE- MAY 1970
HQ-10347

In holographic interferometry a small movement of apparatus between exposures causes the background of the reconstructed scene to be covered with interference fringes approximately parallel to each other. The three-dimensional quality of the holographic image is allowable since a mathematical model will give the location of the fringes.

B70-10272
THE EFFECTS OF NUCLEAR POWER GENERATORS UPON ELECTRONIC INSTRUMENTATION
MILLER, C. G. TRUSCELLO, V. C. DATE- SEP. 1970
NPO-11217

Radiation sensitivity of electronic instruments susceptible to neutron and gamma radiation is evaluated by means of a radioisotope thermoelectric generator /RTG/. The gamma field of the RTG affects instrument operation and requires shielding, the neutron field does not affect operation via secondary capture-gamma production.

B70-10280
THERMALLY CASCADED THERMOELECTRIC GENERATOR
FLAHERTY, R. /WESTINGHOUSE ELEC. CORP./ DATE- MAY 1970
NPO-10753

High efficiency thermoelectric generator utilizes a high-temperature thermoelectric material in thermal series with a low-temperature material. A thermally cascaded generator increases system efficiency.

B70-10292
NONCONTACTING-OPTICAL-STRAIN DEVICE
SILVER, R. H. DATE- AUG. 1970
NPO-10778

Noncontacting-strain-measuring gauge and extensometer remotely measures the mechanical displacement along the entire length of a test specimen. Measurement is accomplished by continuous scanning of a reflected light from reflective bench markings or stripes previously affixed to the specimen.

B70-10296
INEXPENSIVE NET SOLAR FLUX RADIOMETER
DARKOW, G. L. /MO. UNIV./ DATE- AUG. 1970
HQ-10087

Radiometer measures the absorption and reflection of solar radiation by opaque and translucent surfaces. Surface-coating modifications permit measurements over selected broad wavelength bands within the solar spectrum.

B70-10299
THERMALLY INDUCED OSCILLATIONS IN FLUID FLOW
ZUBER, N. /GE/ DATE- JUN. 1970 REAN- SEE ALSO
NASA-CR-84801
M-FS-20449

Theoretical investigation distinguishes the various mechanisms responsible for oscillations of pressure, temperature, and flow velocity, derives a quantitative description of the most troublesome mechanisms, and develops a capability to predict the occurrence of unstable flow.

B70-10311
COMPUTERIZED POLAR PLOTS BY A CATHODE RAY TUBE/GRID OVERLAY METHOD
FREEMAN, J. M. /BOEING CO./ SHoup, E. L. DATE- JUN. 1970
M-FS-14464

Overlay is aligned with four calibration dots so it is not affected by CRT drift or changes in vertical or horizontal gain when producing Nyquist /frequency-response phase/amplitude/ plots. Method produces over 50 plots per hour.

B70-10315
CHEBYSHEV MINIMAX CONTROL THEORY
JOHNSON, C. D. /GEN. DYN./CONVAIR/ DATE- JUN. 1970
M-FS-20639

General, closed-form, analytical solutions are determined for certain classes of C-minimax control problems, several alternative mathematical theories are derived, and a controller design theory is developed to give optimal control in the presence of unmeasurable external disturbances.

B70-10318
IMPROVED HEAT SHIELD/RADIATOR
SMITH, J. W. DATE- SEP. 1970
NPO-11105

Thermally conductive metal shield is put in direct thermal contact with the mounting plate for the radiation detectors. External surfaces of the shield are insulated by an insulation blanket. The internal faces are covered with a thin layer of quartz with a metallic thermally conductive coating on the hidden faces.

03 PHYSICAL SCIENCES

B70-10319

STELLAR SPECTRUM CLASSIFIER

REID, J. H. /LOCKHEED ELECTRON. CO./ DATE- JUN. 1970

MSC-13450

Stellar classification is accomplished by correlating holograms of classified spectra with the Fourier transform of the spectral images to be classified.

B70-10321

DIRECTIONAL CONTROL OF RADIANT HEAT

HOWELL, J. R. PERLMUTTER, M. DATE- JUL. 1970

LEWIS-90237

Surface with grooves having flat bases gives directional emissivities and absorptivities that can be made to approximate a perfect directional surface. Radiant energy can then be transferred in desired directions.

B70-10324

RADIANT HEATING CONCEPT EFFICIENT FOR LIGHT-TRANSMITTING WINDOWS

NEUMAN, J. R. /MARTIN MARIETTA CORP./ NOVORYTA, R. J. DATE- OCT. 1970

M-FS-20630

Single-pane, uncoated windows absorb infrared rays and transmit visible and near-visible wavelengths. Two opposed rod heaters direct infrared rays at the pane, reflectors aid in this heating which prevents condensation. These windows are useful for telescopes and cameras for oceanographic and related studies.

B70-10325

VARIABLES IN TURBINE EROSION

BAUGHMAN, J. R. /N. AM. ROCKWELL CORP./ SPIES, R. DATE- SEP. 1970

M-FS-18677

Study of impact erosion in the operation of turbomachinery is undertaken to predict the results for particular designs. The test program investigates the effects of turbine stator blade shape, rotor blade shape, and variations in test conditions.

B70-10341

NONLINEAR DAMPING IN STRUCTURES

CHANG, C. S. /LOCKHEED CORP./ DATE- SEP. 1970

M-FS-20701

Experimental results prove the feasibility of substructure testing to measure local damping properties directly. Dynamic responses of a structure can be predicted quantitatively, and specimens are less costly and more easily tested with better controlled tests and environments.

B70-10354

IMPROVED OPTICAL LENS SYSTEM

SCHMIDT, L. F. DATE- SEP. 1970

NPO-11311

Objective lens produces a backwardly curving image of a star field that matches the similarly curved surface of the photocathode of an image dissector tube. Lens eliminates the need for a fiber-optics translation between the flat plane image and curved photocathode.

B70-10356

CALORIMETER MEASURES HIGH NUCLEAR HEATING RATES AND THEIR GRADIENTS ACROSS A REACTOR TEST HOLE

BURWELL, D. /WESTINGHOUSE ASTRONUCL. LAB./, COOMBE, J. R. MC BRIDE, J. /IDAHO NUCL. CORP./ DATE- OCT. 1970

NUC-10227

Pedestal-type calorimeter measures gamma-ray heating rates from 0.5 to 7.0 watts per gram of aluminum. Nuclear heating rate is a function of cylinder temperature change, measured by four chromel-alumel thermocouples attached to the calorimeter, and known thermoconductivity of the tested material.

B70-10357

DATA FROM VARIOUS SOURCES PROVIDE STANDARD SINGLE-LEVEL RESONANCE PARAMETERS FOR URANIUM 233

SCHNEIDER, M. J. /WESTINGHOUSE ASTRONUCL. LAB./ DATE- SEP. 1970

NUC-10229

Method of calculating Breit-Wigner resonance parameters for uranium 233 allows for different sources of data. Parameters for 63 resonances in the neutron-energy range 0 to 62 eV are yielded by simultaneous fit to three sets of data.

B70-10360

MULTISPECTRAL FACSIMILE REPRODUCER

BURCHER, E. E. HUCK, F. O. DATE- OCT. 1970

LANGLEY-10618

Facsimile reproducer records spatially well-registered true-color and false-color video data on tape. Proposed optical arrangement allows light sources to be adjusted along the mirror scanning direction in such a manner that no electronic delays are required if the reproducer is operated synchronously with the camera.

B70-10371

HOLOGRAPHIC PHOTOGRAPHY OF HIGH VELOCITY PARTICLES

DYES, W. A. /TECH. OPERATIONS, INC./ MC CABE, B. J. WARD, J. H. DATE- SEP. 1970 REAN- SEE ALSO

NASA-CR-86147

ERC-10318

Fourier transform hologram camera increases the velocity range for holography by a factor of 10 to 1000. Two different optical systems, using a triangular arrangement of beam splitters and a mirror to illuminate the object from two directions, are investigated.

B70-10379

HIGH TEMPERATURE ION SOURCE

SWIFT, R. /AM. SCI. AND ENG., INC./ DATE- OCT. 1970 REAN- SEE ALSO

NASA-CR-86022

ERC-10197

Modified Nielsen-type ion source produces temperatures up to 1500 degrees C and permits obtaining a plasma from low vapor-pressure materials. Design minimizes thermal stresses. Dual-filament discharge chamber achieves the high temperature and provides independent control of the heating and electron emission functions.

B70-10381

DIRECTIONAL COUPLER FOR OPTICAL WAVEGUIDES

SCHWELLER, E. R. /WHEELER LABS., INC./ WILMOT, D. W. DATE- SEP. 1970 REAN- SEE ALSO

NASA-CR-332

ERC-10094

Feasibility study of transmitting optical energy in single mode through photonic waveguides results in a conceptual directional coupler consisting of two types of optical waveguides /a stratified /core/ dielectric and a mirror wall/. Waveguide medium analysis produced formulation of mode cutoff conditions, field distributions, and propagation characteristics.

B70-10405

INTERFEROMETER FOR MEASUREMENT OF OPTICAL POLARIZATION

ABHYANKAR, K. FYMAT, A. DATE- NOV. 1970

NPO-11239

Standard two-beam interferometer with polarizers in each beam and an analyzer at the recombined focal point provides greater accuracy and higher resolution than any other known method for measuring variation of polarization within a spectral line and in the surrounding continuum.

B70-10413

IMPROVED LININGS FOR INTEGRATING SPHERES

FERGERSON, P. O. FRENCH, B. O. DATE- OCT. 1970

MSC-12237

Sphere surface is covered with plain weave of glass fibers coated with polytetrafluoroethylene and one or two layers of magnesium oxide vapor. The resultant lining is suitable for measurement of radiation in the ultraviolet, visible, and near-infrared wavelengths, is not damage prone, and is easily cleaned.

B70-10415

EVALUATION OF TWO DESIGNS FOR CRYOGENIC INSULATION

GETTY, R. C. /GEN. DYN./ DATE- SEP. 1970

M-FS-14740

Shingle-type, crinkled, aluminized polyethylene ester is thermally and structurally tested for cryogenic insulation. Insulation systems require thermal efficiency with minimum weight, and the ability to withstand vibration, acceleration, and rapid pressure drops.

B70-10426

MULTIPASS HOLOGRAPHIC INTERFEROMETER
IMPROVES IMAGE RESOLUTION

BROOKS, R. E. /TRW SYSTEMS GROUP/ HEFLINGER, L.
O. DATE- NOV. 1970

HQ-10499

Multipass holographic interferometer forms a hologram of high diffraction efficiency, and hence provides a bright and high contrast interferogram. It is used to study any effect which changes the index of refraction and to study surface deformations of a flat reflecting surface.

B70-10438

AIRBORNE SPECTROMETER SENSES SEVERAL GASES

MC DOWALL, J. /BARRINGER RES., LTD./ MOFFAT, A.
J. DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-99609
MSC-13234

Spectrometer*s variable shutter permits observation of a wide range of plume widths. Adjustable grating, counter, and access window enable operator to reset grating*s position during flight by resetting the counter to a predetermined number. Quartz correlation mask and spectral-aperture instrument-function filter are mounted in a replaceable precision frame.

B70-10439

LASER METHOD FOR FINDING AXIS OF ROTATION

MASSEY, G. A. /SYLVANIA ELECTRON. SYSTEMS/ DATE-
DEC. 1970 REAN- SEE ALSO NASA-CR-985

ARC-10388

Illumination of rotating surface with laser beam and examination of interference patterns resulting from diffused reflections determines position of axis and direction of motion. Interference patterns are viewed through a lens or recorded on film as circular streaking patterns.

B70-10441

HYDROGEN MASER - MEASUREMENT OF WALL SHIFT
WITH A FLEXIBLE BULB

BRENNER, D. /HARVARD UNIV./ DATE- NOV. 1970
HQ-10552

Flexible bulb is squeezed to change mean free path of hydrogen atoms, and to change bulb*s volume without changing its surface area. Volumes in the different configurations are measured to learn the change in mean free path and calculate wall shift. Various bulb coating materials are described.

B70-10442

DERIVATION OF A GENERAL PERTURBATION

SOLUTION - ITS APPLICATION TO

DETERMINATION OF ORBIT

BORN, G. H. /TEX. UNIV./ DATE- DEC. 1970
MSC-13377

Analytical solution to three-body problems is applied to the problem of predicting the orbit of a lunar satellite and determining the orbit of a near-earth satellite. Using this solution, the state vector may be generated at any time without intermediate numerical extrapolation.

B70-10445

ALUMINUM-SILICON EUTECTIC ALLOY IMPROVES
ELECTRICAL AND MECHANICAL CONTACT TO
SILICON CARBIDE

SHIER, J. S. DATE- NOV. 1970
ERC-10277

Alloy contact layer is made at relatively low temperature and has good wetting characteristics. Contacts adhere well to silicon carbide surface, penetrating about 300 to 500 angstroms into it. Contacts are ohmic on p-type silicon carbide and blocking on n-type.

B70-10461

VERY LOW VELOCITY FLOW SENSOR USES FLUIDIC
TECHNIQUES

TUREK, R. P. /BOWLES ENG. CORP./ DATE- NOV. 1970

REAN- SEE ALSO NASA-CR-86352

ERC-10404

Parallel-flow wind sensor provides differential pressure output which is nearly linear and relatively insensitive to supply pressure over a wide range of wind velocities. Cross-flow wind sensor outputs are input to a fluidic amplifier to obtain high pressure output for low wind velocities without changing output characteristics.

B70-10471

APPARATUS FOR SIMULTANEOUS ION COUNTING AND
CURRENT RECORDING IN MASS SPECTROMETRY

KOHL, F. J. ROBERTS, W. K. STEARNS, C. A. DATE-
SEP. 1970

LEWIS-11103

Ion counting system is coupled to the last dynode of an Allen-type electron multiplier on the mass analyzer of a double focusing mass spectrometer. This leaves the anode available for an electrometer, making possible simultaneous measurements. Coupling is achieved by a ferrite core transformer and associated circuitry.

B70-10472

AMBIENT-LIGHT-ABSORBING SCREEN FOR FRONT
PROJECTION

HILBORN, E. H. DATE- NOV. 1970

ERC-90017

Screen permits front surface projection of collimated light beam under conditions of high extraneous illumination. Screen has high reflective efficiency over any desired viewing area. Its optical properties are maintained when moisture droplets are present on the external front planar surface. Surface is easily cleaned and maintained.

B70-10473

GROWTH OF SINGLE-CRYSTAL GALLIUM NITRIDE

CLOUGH, R. /RCA/ RICHMAN, D. TIETJEN, J. DATE-
OCT. 1970 REAN- SEE ALSO NASA-CR-86192,
NASA-CR-110194

ERC-10301

Use of ultrahigh purity ammonia prevents oxygen contamination of GaN during growth, making it possible to grow the GaN at temperatures as high as 825 degrees C, at which point single crystal wafers are deposited on /0001/-oriented sapphire surfaces.

B70-10491

KINETIC INDUCTANCE MEASURED IN A
SUPERCONDUCTING WIRE

MESERVEY, R. H. /MIT/ TEDROW, P. M. DATE- NOV.
1970 REAN- SEE ALSO N69-33783

ERC-10305

Ultrasensitive technique to measure kinetic inductance has test specimen included as part of the inductance of a tank circuit of a tunnel diode oscillator. Frequency counter measures shift in frequency of oscillator, caused by changes in inductance. Frequency shift in tank circuit is proportional to change in kinetic inductance

B70-10493

VACUUM LEAK DETECTOR FEATURES HIGHER

SENSITIVITY

BARRINGTON, A. E. DATE- NOV. 1970 REAN- SEE ALSO
NASA-CR-86243

ERC-10034

Technique for measuring partial pressures utilizes extremely large resonance scattering cross section of xenon at 1471 angstroms to scatter light in a vacuum cell. Output signal of ultraviolet-sensitive photodetector is proportional to the partial pressure and to the rate of inleakage of xenon probe gas.

B70-10510

PLASMA CONDUCTIVITY GAGE

GILL, S. P. /STANFORD RES. INST./ DATE- NOV.
1970

ARC-10147

Gage permits determination of stagnation conductivity from measurement of shunt impedance presented by the plasma between the inner and outer conductors of a segment of coaxial transmission line. Response of gage permits its

03 PHYSICAL SCIENCES

use in shock-tube work and research on explosive propagation.

B70-10536

OVERLAPPED CONIC SIMULATION OF THREE-BODY TRAJECTORIES

WILSON, S. W., JR. /TRW SYSTEMS GROUP/ DATE-

NOV. 1970 REAN- SEE ALSO NASA-CR-101862

MSC-13460

Trajectory computation technique for three-body motion is based on analytical derivation and empirical validation of pseudostate theory. Application of technique yields **overlapped conic** trajectories with error magnitudes only 20 percent as great as those of patched conic trajectories.

B70-10539

THE DETERMINATION OF STABILITY DOMAINS FOR NONLINEAR DYNAMICAL SYSTEMS

ABBATE, J. V. /GRUMMAN AIRCRAFT ENG. CORP./

GEISS, G. R. DATE- SEP. 1970 REAN- SEE ALSO

NASA-CR-84042

M-FS-14832

Research effort is described which is directed toward several aspects of the stability problem pertinent to the analysis of space vehicle guidance systems. Problems encountered during this study are mentioned.

B70-10549

MINIATURE SPRAY-PAINTING BOOTH

FEE, K. W. /N. AM. ROCKWELL CORP./ DATE- NOV.

1970

MSC-15811

Transparent spray booth provides method for quality painting and repair of surfaces in clean room or other specialized environments. Overspray and virtually all contaminating vapor and odor can be eliminated. Touch-up painting is achieved with spray gun.

B70-10563

NOVEL WAVE GENERATOR ADAPTABLE TO INDOOR

SURFBOARDING

HEIDMANN, M. F. PHILLIPS, B. R. DATE- DEC. 1970

REAN- SEE ALSO NASA-TN-D-4380

LEWIS-11096

Method is devised for generating strong acoustic waves in confined body of water. Strong travelling acoustic waves or modes are created by rotation of radial jet of gas at center of short cylindrical chamber. Method and wave structure suggest novel facility for water sports.

B70-10564

HIGH-TEMPERATURE RAPID-RESPONSE THERMOCOUPLE FOR REDUCING ATMOSPHERES

GRACEY, C. M. /AEROJET-GEN. CORP./ HOFF, R. G.

DATE- NOV. 1970

NUC-10530

Thermocouple measures continuously in flowing gaseous hydrogen at temperatures up to 4000 deg F, in environments made hazardous by radiation, and where rapid response and calibration reproducibility are critically important. Thermocouple wires extend continuously, without splice or foreign material, from cold junction to probe's tip.

B70-10575

A SIMPLIFIED METHOD FOR DETERMINING CONVECTIVE HEAT-TRANSFER COEFFICIENTS

HUFF, R. G. DATE- OCT. 1970 REAN- SEE ALSO

NASA-TN-D-5520, NASA-TN-X-1980

LEWIS-11156

Convective heat transfer coefficients are determined by measuring temperatures of hot and cold fluids separated by wall, and temperature of wall at single point. Method is applicable to heat exchangers and rocket engines.

B70-10581

MULTIPLE FOCUSING MAGNETS USED FOR VELOCITY SELECTION OF ATOMS

SPON- INNOVATOR NOT GIVEN /HEWLETT-PACKARD CO./

DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-89275,

B67-10146

GSFC-10128

Computer techniques are used in calculating velocity selection of hydrogen atoms for use in

maser frequency standard. Technique permits designer to resolve design problems of multiple focusing magnets employed in atomic velocity selection. There is excellent agreement with hand calculations in constant magnetic moment approximation.

B70-10591

THE WATER-CRYOGEN HEAT EXCHANGER

BARTLIT, J. R. /LOS ALAMOS SCI. LAB./ BOYER, K.

WILLIAMSON, K. D. DATE- OCT. 1970

NUC-11029

Heat exchanger, using water as heat medium, converts liquid hydrogen to gaseous hydrogen at a very high rate. Possible applications include treatment of liquified natural gas in cities to bring the gas on-line quickly, conversion of liquid oxygen and liquid nitrogen for steel mills, and high volume inert purging.

B70-10592

THE LOW-COST CRYOSTAT

BRONSON, J. C. /LOS ALAMOS SCI. LAB./ DATE- OCT.

1970

NUC-11034

Inexpensive method of fabricating cryostats uses polyurethane, super insulation, fiber glass, and cardboard/plywood. Cryostat weighs 1/10 of Dewar, occupies about same volume, is easy to handle, requires no metal parts, and can be formed into virtually any configuration.

B70-10593

FROST AS AN INSULATOR

BRONSON, J. C. /LOS ALAMOS SCI. LAB./ DATE- OCT.

1970

NUC-11039

Insulating qualities of frost and mechanisms for using frost in specific applications in controlled experiments are discussed. With available supply of moist air, frost possesses inherent advantage of easy insulation of cryogenic lines and improvement of overall system efficiency.

B70-10596

HIGH-STRENGTH MAGNETIC MATERIALS

DETERT, K. /WESTINGHOUSE ELEC. CORP./ DATE- NOV.

1970 REAN- SEE ALSO NASA-CR-1460

LEWIS-10697

Two new precipitation-hardened magnetic alloys are suitable for operation in 800 to 1600 deg F range. One is a martensitic alloy and the other a cobalt-based alloy. They possess improved creep resistance and have application in high temperature inductors and alternators.

B70-10608

EVALUATION OF DECAY CURVES OF A CHEMICAL SPECIES UNDERGOING SIMULTANEOUS FIRST- AND SECOND-ORDER DECAY

SCHMIDT, K. H. DATE- DEC. 1970 REAN- SEE ALSO

ANL-7400

ARG-10281

IBM 1620 computer prepares tables to enable fast calculation of the first- and second-order rate constants from two half-lives and the corresponding initial concentrations, obtained from either one or two decay curves.

B70-10611

AN IMPROVED ORBITRON IONIZATION GAGE MEASURES ULTRAHIGH VACUUM

GOSSELIN, C. M. /MIDWEST RES. INST./ DATE- NOV.

1970 REAN- SEE ALSO NASA-CR-1300

LANGLEY-10535

Ionization gage with improved signal-to-noise ratio has a helical coil electrode which separates the solid cathode ion collector from the volume where ionization of gas molecules takes place. Helical coil increases lifetime of electrons and reduces secondary emission from the collector.

B70-10620

QUADRUPOLE IONIZATION GAGE MEASURES ULTRAHIGH VACUUM

SCHWARZ, H. J. /RENSSELAER POLYTECH. INST./

DATE- DEC. 1970

LANGLEY-10397

Quadrupole system, energized with a 200 MHz electric field, restrains ionizing electrons

within the center of the ionization gage. Oscillatory trajectory of the electrons increases the probability of ionizing the gas molecules, lowers background X-ray level, and increases the signal-to-noise ratio.

B70-10622

RUGGED, LOW-CONDUCTANCE, HEAT-FLOW PROBE

BOUDREAU, E. J. /LITTLE /ARTHUR D., INC./
HINCKLEY, R. B. LUCAS, R. M. MC CULLOUGH, J. E.
DATE- DEC. 1970
MSC-13443

Lightweight, compact probe structure has low thermal conductance to enable accurate measurement of slight temperature gradients. Probe combines ruggedness, high precision, accuracy, and stability. Device can withstand vibration, shock, acceleration, temperature extremes, and high vacuums, and should interest industrial engineers and geologists.

B70-10628

ACCURATE, RAPID, TEMPERATURE AND LIQUID-LEVEL SENSOR FOR CRYOGENIC TANKS

DE WITT, R. L. STOCHL, R. J. TERBEEK, H. G.
DATE- NOV. 1970 REAN- SEE ALSO NASA-TN-D-4339
LEWIS-11208

Thermopiles measure ullage gas temperatures to within plus or minus 1.65 deg K between 20 and 300 deg K, and also serve as point liquid-level sensors. Thermopile technique measures smaller temperature differences by keeping the reference junctions inside the tank and near the temperature range of the measuring junction.

B70-10631

LASER BEAM HYDROCARBON DETECTOR

BEAM, B. H. BURROUS, C. N. JAYNES, D. N. DATE-
NOV. 1970
ARC-10156

Portable instrument passes light from helium-neon laser at a wavelength of 3.39 microns through the atmosphere being monitored and measures attenuation of the laser beam. Since beam attenuation is due almost exclusively to absorption of radiation by hydrocarbons, a quantitative measure of their concentration is available.

B70-10632

TOROIDAL MIRRORS PROVIDE VIRTUAL WALLS FOR BREAKS IN LIGHT PIPES

YOUNG, N. /BLOCK ENG., INC./ DATE- NOV. 1970
ARC-10031

Section of light pipe consists of separated segments having opposed toroidal mirrors that intercept meridional rays to present virtual wall in space between mirrors, thus insuring uninterrupted light transmission down the pipe. Design affords internal access to pipe section. Segments are electrically or thermally insulated from one another.

B70-10646

LIGHTWEIGHT, SELF-EVACUATED INSULATION PANELS

DENGLER, R. P. NIENDORF, L. /UNION CARBIDE
CORP./ NIES, G. PERKINS, P. J., JR. DATE- DEC.
1970 REAN- SEE ALSO NASA-TN-D-4375
LEWIS-90361

Multilayer insulation of prefabricated panels is developed for cryogenic storage tanks. System utilizes panels of aluminized Mylar separated by sheets of low conductivity polyurethane foam. Panels are self-evacuated by cryopumping of gaseous carbon dioxide at time of use.

B70-10649

PROCEEDINGS OF THE SYMPOSIUM ON LONG-LIFE HARDWARE FOR SPACE

SPON- INNOVATOR NOT GIVEN /MARSHALL SPACE FLIGHT
CENTER/ DATE- DEC. 1970
M-FS-20638

Two-volume edition of the papers of the symposium is described. It is divided into six sections - parts, materials, management, system testing, component design, and system test. Material presented focuses attention on problems created by the increased complexity of technology and long-term mission requirements.

B70-10656

ORBIT, REENTRY, AND LANDING ATTACHMENT FOR GLOBES

PRITCHARD, E. B. DATE- DEC. 1970
LANGLEY-10626

Navigational device, invented to aid recovery of spacecraft from any orbit, also illustrates motions of satellites relative to earth and their entry-ranging requirements. Device rapidly and accurately defines lateral range requirements for spacecraft returning to any desired site without manual or computerized calculation of orbital equations of motion.

B70-10658

DUAL-WAVELENGTH SYSTEM MONITORS DEPOSITION OF FILMS - A CONCEPT

ZURASKY, J. L. DATE- DEC. 1970
M-FS-20675

System monitors fabrication of high-quality optical filters and other precise film deposition operations. System generates output signal of an element that changes rapidly when deposition process changes or stops, and eliminates defects of single-wavelength systems. Five additional advantages of dual-wavelength system are listed.

B70-10659

OPTICAL CONTAMINATION DURING THERMAL TESTING IN VACUUM

ZWIENER, J. M. DATE- DEC. 1970
M-FS-20736

Comparative tests are described for optical degradation in vacuum systems served by oil-type or ion-type pumping operation. Results show that degradation occurs only during ultraviolet irradiation in vacuum systems with oil-type pumping systems and that it increases with exposure time. Degradation does not occur with ion systems.

B70-10665

OPTICAL PROBING OF SUPERSONIC AERODYNAMIC TURBULENCE

CIKANEK, H. A., JR. FUNK, B. H. DATE- DEC. 1970
REAN- SEE ALSO N69-38125
M-FS-20686

Laser quasi-schlieren system and laser shadow-correlation system retrieve flow-related signals sufficient for computing accurate, reproducible correlation peaks. Statistical method for obtaining one-shot measurements of the decay history of turbulent structures in a stationary frame of reference is discussed.

B70-10667

HEAT-TRANSFER DATA FOR HYDROGEN

MC CARTHY, J. R. /N. AM. ROCKWELL CORP./ MILLER,
W. S. OKUDA, A. S. SEADER, J. D. DATE- DEC.
1970
M-FS-18754

Information is given regarding experimental heat-transfer data compiled for the turbulent flow of hydrogen within straight, electrically heated, round cross section tubes. Tube materials, test conditions, parameters studied, and generalized conclusions are presented.

B70-10670

FLOW CHARACTERISTICS OF AN AIR JET IMPINGING ON A FLAT SURFACE

GAUNTNER, J. W. HRYCAK, P. /NEWARK COLL. OF
ENG./ LEE, D. T. LIVINGOOD, J. N. B. DATE- DEC.
1970 REAN- SEE ALSO NASA-TN-D-5652,
NASA-TN-D-5690
LEWIS-11129

Survey develops adequate heat transfer correlations for design use. Flow characteristics studies include - potential core length, velocity and pressure distribution through the jet, and spread of jet and velocity decay along jet axis.

B70-10673

LOW TEMPERATURE USES OF HELIUM

BROWN, G. V. DATE- DEC. 1970
LEWIS-11171

Helium is used for purging and pressurizing cryogenic rocket propellants, welding, atmosphere control, leak detection, and refrigeration. It

03 PHYSICAL SCIENCES

provides the lowest possible liquid-bath temperature and produces superconductivity in certain materials. Its superfluid effects are used in superconducting magnets.

B70-10677

COMPACT ELECTRIC HEATER

BLOCK, H. B. LUMANICK, S. MACOSKO, R. P.
RICHTER, C. W. DATE- DEC. 1970 REAN- SEE ALSO
NASA-TM-X-52778
LEWIS-11172

Forced convection electric heater heats inert gas flows to temperatures of from 1250 to 1650 deg F and tests Brayton power systems for advanced spacecraft. Heater has two basic components, a heat exchanger core and a containment vessel.

B70-10678

DEVELOPMENT OF SUPERCONDUCTIVE MAGNETS

LAURENCE, J. C. DATE- DEC. 1970
LEWIS-11170

Survey of superconductive magnets considers - stabilization problems, advances in materials and their uses, and design evolution. Uses of superconducting magnets in particle accelerators and bubble chambers, as well as possible applications in magnetohydrodynamic and thermonuclear power generation and levitation are discussed.

B70-10680

ASTRONAUT RESCUE AIR PACK /ARAP/ AND

EMERGENCY EGRESS AIR PACK /EEAP/

BARNHART, W. L. /BENDIX CORP./, CLEW, R. D.
WADDELL, H. M., JR. /N. AM. ROCKWELL CORP./
DATE- DEC. 1970
KSC-10522

Two designs for a lightweight, low profile, mobile rescue apparatus providing a 15-minute air supply and self-contained two-way communications assembly are described. Units are designed for astronaut use in hazardous environments.

B70-10681

LESS-EXPENSIVE ROCHON PRISMS

AMMANN, E. O. /SYLVANIA ELECTRON. SYSTEMS/
MASSEY, G. A. DATE- DEC. 1970
M-PS-20554

Inexpensive Rochon prisms can be produced by substituting easily polished glass for one-half of the calcite. Reciprocal polarizing properties of a conventional Rochon prism are retained, and angular separation between ordinary and extraordinary rays is the same as in all-calcite prism.

B70-10683

THEORETICAL STUDY OF A PLASMA ACCELERATOR

PEYRET, R. DATE- DEC. 1970 REAN- SEE ALSO
N67-16558
NPO-11480

Two-dimensional unsteady flow established in an electrodeless traveling wave plasma accelerator was theoretically analyzed to help explain, and possibly predict, phenomena appearing during experiments on problems of acceleration of an ionized fluid plasma.

B70-10686

SINGLE-LEVEL RESONANCE PARAMETERS FIT NUCLEAR

CROSS-SECTIONS

DRAWBAUGH, D. W. /WESTINGHOUSE ASTRONUC. LAB./
GIBSON, G. MILLER, M. PAGE, S. L. DATE- DEC. 1970

NUC-10101

Least squares analyses of experimental differential cross-section data for the U-235 nucleus have yielded single level Breit-Wigner resonance parameters that fit, simultaneously, three nuclear cross sections of capture, fission, and total.

B70-10690

COMPARISON OF AERODYNAMIC NOISE FROM THREE

NOSE-CYLINDER COMBINATIONS

GUENTHER, R. A. /LOCKHEED MISSILES AND SPACE CO./
REDING, M. P. DATE- DEC. 1970
M-PS-20816

Results of experiments with three different cylinder and blunted nose combinations are discussed. Combinations include smooth cylinder

with single 15 deg cone, smooth cylinder with double cone of 25 and 10 deg, and longitudinally corrugated cylinder with similar double cone.

B70-10694

HIGH INTENSITY HEAT-PULSE SOURCE OPERATES WITHOUT COOLING SYSTEM

RUSSELL, L. D. DATE- DEC. 1970
ARC-10178

Tungsten-iodine quartz lamp with on-off control is mounted at focus of ellipsoidal reflector and shutter is mounted at conjugate focus. Flux sensor monitors lamp and actuates shutter which emits a heat pulse when the radiant flux builds up to requisite level.

B70-10711

AN IMPROVEMENT IN BLACKBODY CAVITY DESIGN

SCHMIDT, R. M. /HONEYWELL, INC./ DATE- DEC. 1970
REAN- SEE ALSO NASA-CR-1583
LANGLEY-10292

Setting the axis of the conical cavity at an angle to the axis of observation removes the imperfection at the apex of the cone from the direct observation area of the radiometer. Fillet no longer behaves as a nonuniformity in the blackbody.

B70-10726

PERFORMANCE MAP OF A HEAT PIPE CHARGED

WITH AMMONIA

SCHWARTZ, J. DATE- DEC. 1970 REAN- SEE ALSO
N65-20720
NPO-11454

Test results are presented which describe dryout in type-304 stainless steel heat pipes when ammonia is the working fluid. Graph compares heat transfer capabilities of both ammonia and water. Heat pipe apparatus and performance are described.

B71-10015

RESISTIVITY AND HALL MEASUREMENTS OF THERMOELECTRIC MATERIALS

RUFF, R. D.

JAN. 1971 SEE ALSO NASA-TM-X-53763
M-PS-20470

Instrumentation setup measures resistivity values between .000003 and 100,000 ohm-cm and Hall values between 0.2 and 10 billion cc/coulomb, with an absolute error of less than 5 percent. Results of measurement are given for 8 electrical brush specimens and pure silver.

B71-10022

DESIGN AND DEVELOPMENT OF A FAST SCAN INFRARED

DETECTION AND MEASUREMENT INSTRUMENT

DOSTOHIAN, A. S./RAYTHEON CO./ HAMITER, L.
NOWAKOWSKI, M. VANZETTI, R.

JAN. 1971

M-PS-20749

Infrared microscope instrument measures and plots the infrared profile of semiconductor chips, transistors and integrated circuits. Infrared analyses yields information on electrical and physical properties, enabling manufacturing improvements in semiconductor performance and reliability. Operational performance and main sections of the instrument are given.

B71-10026

ULTRAVIOLET INTERFEROMETER

DAY, R. A./OKLA. UNIV./

JAN. 1971

HQ-10546

Grazing-incidence multi-beam interferometer /GIMBI/ obtains high resolution spectroscopic data from ultraviolet region of the spectrum without use of concave diffraction gratings or partially reflecting coatings. Device produces interference pattern whose fringes may be sharper than those produced by a Fabry-Perot interferometer.

B71-10031

IMPROVED SOURCE OF INFRARED RADIATION FOR SPECTROSCOPY

BURKHARD, D. G./P. E. C. RES. ASSOCIATES, INC./ RAO, K. N.

FEB. 1971

M-PS-20613

Radiation from a crimped V-groove in the electrically heated metallic element of a

high-resolution infrared spectrometer is more intense than that from plane areas adjacent to the element. Radiation from the vee and the flat was compared by alternately focusing on the entrance slit of a spectrograph.

B71-10036

A 7.6M /25-FT/ EXTREME ENVIRONMENTS SIMULATOR
ARGOUD, H. J. HARRELL, J. W.
FEB. 1971 SEE ALSO NASA-CR-106222
NPO-11353

Stainless steel cylindrical simulation chamber permits testing equipment under extreme cold, high partial vacuums, and intense solar radiation. Applications include heat balance and temperature distribution studies, investigations of subsystem interactions, tests of attitude control equipment and sensors, and acceptance tests of complete systems.

B71-10041

AN UNCONFINED, LARGE-VOLUME HYDROGEN/AIR EXPLOSION
KNIGHT, H. T./LOS ALAMOS SCI. LAB./ OTWAY, H. J.
REIDER, R.
MAR. 1971
NUC-11000

Cause and results of the autoignition of 283 cubic meters of hydrogen gas, of which only about 10 percent exploded, are given. Results indicate that autoignition produces an explosion which could be described as a deflagration of explosive velocity, with a shock wave of sonic velocity and minor damage potential.

B71-10046

INEXPENSIVE HIGH-TEMPERATURE FURNACE FOR THERMOCOUPLE CALIBRATION
GRACEY, C. H./AEROJET-GEN. CORP./ HOFF, R. G.
MAR. 1971
NUC-10372

New furnace calibrates unknown thermocouple by comparing its electrical output to a reference thermocouple /previously calibrated by optical pyrometry/, as both are heated simultaneously. Thermocouples may be radioactive, thus heat source must be accessible by remote manipulation and inspection measurements. Advantages of furnace operation are cited.

B71-10065

MULTIPLE SHUTTERS FOR A STEREOSCOPIC CAMERA
MARKER, L. W./GOERTZ OPT. CO., INC./ PERKINS, D. B.
BIKER, J. G. SANPEY, H. R.
APR. 1971
NSC-13507

Focal plane shutter assembly composed of three mechanically separate rotary shutters permits exposure of three separated photographic films simultaneously with exposure time of 0.08 second. Exposure time is repeatable within 2 percent, uniformity of exposure over all three films is within 5 percent.

B71-10066

TECHNIQUE FOR EXPERIMENTAL DETERMINATION OF RADIATION INTERCHANGE FACTORS IN SOLAR WAVELENGTHS
BOBCO, R. P./HUGHES AIRCRAFT CO./ HOLTE, L. J.
WENSLEY, J. B.
APR. 1971 SEE ALSO NASA-CR-101945
NSC-13476

Process obtains solar heating data which support analytical design. Process yields quantitative information on local solar exposure of models which are geometrically and reflectively similar to prototypes under study. Models are tested in a shirtsleeve environment.

B71-10068

KALEIDOSCOPIC LIGHT FEEDBACK FOR TELEVISION SYSTEMS
DAVIS, J. G. WOODS, J. M.
APR. 1971
NSC-12386

Technique generates special effects for broadcast television to study effects of light feedback on television systems. Signals are produced for tape recording, broadcasting, or displaying on black-and-white or color monitors. The patterns have from three to eight sides and expand, contract, or rotate at various speeds.

B71-10085

MODIFIED BUBBLE LEVEL SENSES PITCH AND ROLL ANGLES OVER WIDE RANGE
MATTSON, E. J./GOERTZ OPT. CO., INC./ MC NALLY, P. F.
APR. 1971
NSC-13506

Bubble level sensor with fiber-optic field flattener is simple, rugged, small, and impervious to temperature and vibration effects. Pitch angles from -15 deg to +40 deg and roll angles of +30 deg are determined within 0.5 deg.

B71-10110

IMPROVED REFLECTIVE COATING FOR INTEGRATING SPHERES
STUART, J. W.
MAY 1971
GSFC-10855

Inorganic salts or oxide material is transparent in single-crystal form, has high refractive index, smooth cleavage, and chemical stability, is stable to radiations of interest, partially soluble and easily dispersed in liquid for spraying, and readily dried /cured/ with reasonable cohesion and adhesion, and has good mechanical stability.

B71-10111

EXHAUST CLOUD RISE AND DIFFUSION IN THE ATMOSPHERE
CHANDLER, M. W./GEOMET, INC./ CHU, R. T. THAYER, S. D.
MAY 1971 SEE ALSO NASA-CR-61331
M-PS-21119

Analytical approach develops physical-mathematical model of rocket engine exhaust cloud rise, growth, and diffusion. Analytic derivations and resultant model apply to hot exhaust cloud study or industrial stack plumes, making work results applicable to air pollution. Model formulations apply to all exhaust cloud types and various atmospheric conditions.

B71-10112

RADIANT ENERGY ABSORPTION ENHANCEMENT IN OPTICAL IMAGING SYSTEMS
BROWN, R. M. GUNTER, W. D., JR.
MAY 1971
ARC-10194

Reimaging system efficiently uses incident light and overcomes previous imaging detector problems. Optical system collects reflected and focal plane transmitted light and redirects it so it again impinges on focal plane in register with original image. Reimaging unabsorbed light increases light absorption and detector use probability.

B71-10113

OPTICAL ENHANCEMENT OF PHOTOMULTIPLIER SENSITIVITY
GRANT, G. R. GUNTER, W. D., JR.
MAY 1971
ARC-10213

Transmission and reflection light losses are reduced by introducing light into end-window of device at an angle large enough to normal so total internal reflection occurs at both photocathode-vacuum and window-air interfaces.

B71-10118

SYSTEM ACCURATELY CONTROLS PRESSURE IN CRYOGENIC TANKS
KIRCHHEIER, W. E., JR.
MAY 1971
LEWIS-11329

High-resolution differential pressure transducer senses very small positive or negative pressure variations in the cryogenic tank relative to absolute reference pressure. System is useful in calibrating instruments where working fluid must be maintained at closely controlled temperature, or in processes requiring very fine pressure control.

B71-10120

LASER DOPPLER INSTRUMENT MEASURES FLUID VELOCITY WITHOUT REFERENCE BEAM
BOURQUIN, K. R. SHIGEMOTO, F. H.
MAY 1971 SEE ALSO B66-10693, B68-10349,
NASA-TN-D-4453
XAC-10770

Fluid velocity is measured by focusing laser beam on moving fluid and measuring Doppler shift in frequency which results when radiation is

03 PHYSICAL SCIENCES

scattered by particles either originally present or deliberately injected into moving fluid.

B71-10131

ACTIVE CAVITY RADIONETER, TYPE III - AN AUTOMATIC, ABSOLUTE STANDARD, HIGHLY ACCURATE DETECTOR
WILLSON, R. C.

MAY 1971

NPO-11504

Instrument of simple construction operates without vacuum enclosure over wide pressure range and temperatures from 218 to 398 deg K and defines absolute radiometric scale to within less than 0.5 mW/sq cm. It has potential application to meteorology and climatology and operates on electrical substitution calorimeter principle.

B71-10139

MICROWAVE CRYOGENIC THERMAL-NOISE STANDARDS

STELZRIED, C. T.

MAY 1971 SEE ALSO NPO-10610

NPO-11424

Field operational waveguide noise standard with nominal noise temperature of 78.09 plus/minus 0.12 deg K is calibrated more precisely than before. Calibration technique applies to various disciplines such as microwave radiometry, antenna temperature and loss measurement, and low-noise amplifier performance evaluation.

B71-10143

ELECTRICAL INSTRUMENT MEASURES POSITION AND VELOCITY OF SHOCK WAVES

DANNENBERG, R. E. HUMPHRY, D. E.

MAY 1971

ARC-10356

Instrument employs a sensor consisting of twin-electrode probe mounted in shock tube wall, with small dc voltage impressed across electrodes. Power supply, amplifier, and gate pulse generator complete the system. Instrument provides data for construction of wave diagrams, as well as measurement of shock velocity.

B71-10144

SCINTILLATION DETECTOR FOR CARBON-14

KNOLL, G. F./MICHIGAN UNIV./ ROGERS, W. L./BENDIX CORP./

MAY 1971 SEE ALSO NASA-CR-73384

ARC-10378

Detector consists of plastic, cylindrical double-wall scintillation cell, which is filled with gas to be analyzed. Thin, inner cell wall is isolated optically from outer (guard) scintillator wall by evaporated-aluminum coating. Bonding technique provides mechanical support to cell wall when device is exposed to high temperatures.

B71-10145

VIBRATION DETECTION USING LASERS

MASSEY, G. A./SYLVANIA ELECTRON. SYSTEMS/

MAY 1971

ARC-10389

Interference displacement patterns produced when light from a laser illuminates diffusely reflecting, vibrating surface are observed and photographed. Standing wave modes on model surface can be interpreted in order to yield amplitude and frequency of vibrations. Flat, white surfaces yield best interference patterns, even over considerable surface curvature.

B71-10157

DIGITAL DECORRELATOR SAVES TIME AND EXPENSE IN ACOUSTIC TESTING OF STRUCTURES

NAKICH, R. B./TIME ZERO CORP./ WOODBURY, R. C.

JUN. 1971

NPO-11542

Instantaneous signals from coherent random sound field are summed and time delayed to avoid introducing vectorial addition errors. Resultant statistically independent signals are applied to spectrometer. Displayed sound pressure level is proportional to square root of sum of squares of sound pressure levels taken over frequency range of interest.

B71-10160

DROPOUTS IN MAGNETIC TAPE RECORDING AND REPRODUCTION

VAN, K. W.

JUN. 1971

NPO-11519

Judicious selection and maintenance of tape and tape transports minimizes dropouts.

B71-10166

TRIANGULAR-WAVE GENERATOR WITH CONTROLLED SWEEP POLARITY

WONG, H. Y./LOCKHEED MISSILES AND SPACE CO./

JUN. 1971

ARC-10332

Generator, comprised largely of integrated circuits, has operational amplifier connected as integrator to provide linear voltage ramp, pair of logic gates and one-shot multivibrator function as sweep reverse circuit feeding the integrator. Solid state switch effects generator hold capability.

B71-10180

IMPROVED THERMAL PAINT FORMULATION

GATES, D. W. ROGER, P. O./IIT RES. INST./ ZERLAUT, G. A.

JUN. 1971

M-FS-14706

Potassium silicate-treated zinc oxide paint stabilizes pigment against ultraviolet-induced, bleachable degradation in infrared region, and permits use of ZnO as pigment in ultraviolet-stable coatings based upon polymethyl siloxane elastomers and resins. Material has low absorptance/emittance ratio.

B71-10191

COMPUTER-CONTROLLED MASS SPECTROMETER FOR ON-LINE GAS ANALYSIS

HAFNER, F. W. HOUSEMAN, J.

JUN. 1971

NPO-11427

System detects gases in combustion chambers and records their levels of concentration. Simplified data recording and reduction process permits analysis rate of 9 msec per peak and recording of probe position, pressures, temperatures, and mass spectrometer data on same tape. System is applicable to air pollution control.

B71-10203

WATER ELECTROLYSIS MODULE

SCHUBERT, F. H./TRW, INC./

JUN. 1971 SEE ALSO NASA-CR-73394

ARC-10246

Module utilizes static water-feed electrolysis system and air-cooled fins to remove heat generated by cell inefficiencies. Module generates 0.15 pounds of oxygen and 0.0188 pounds of hydrogen at current density of 100 amps per square foot. Generator operates in aircraft, spacecraft, or submarine cabins.

B71-10232

LASER INTERFEROMETRY METHOD FOR ABSOLUTE MEASUREMENT OF THE ACCELERATION OF GRAVITY

HUDSON, O. K.

JUL. 1971 SEE ALSO NASA-TN-X-53832, NASA-TN-X-53856,

NASA-TN-X-64503

M-FS-21225

Gravimeter permits more accurate and precise absolute measurement of g without reference to Potsdam values as absolute standards. Device is basically Michelson laser beam interferometer in which one arm is mass fitted with corner cube reflector.

B71-10235

DEVICE MEASURES CONDUCTIVITY AND VELOCITY OF IONIZED GAS STREAMS

COOK, G. R. POSCH, R. E. ROSSOW, V. J. VENDELL, E.

W./UTAH STATE UNIV./

JUL. 1971 SEE ALSO NASA-TN-D-4538

XAC-05695

Coaxial arrangement of primary coil and two sensing secondary coils contained inside slender quartz tube inserted into ionized stream permits simultaneous determination of conductivity and linear velocity. System results agree favorably with theory.

B71-10236
NOISE DIFFRACTION PATTERNS ELIMINATED IN COHERENT OPTICAL SYSTEMS
 GREBOWSKY, G. R. HERMANN, R. L. PAULL, H. B. SHULMAN, A. R.
 JUL. 1971
 GSFC-11133

Lens rotation technique of noise diffraction pattern elimination spreads diffracted energy, normally concentrated over small area of image, over much larger annular area. Technique advantages include simplified lens selecting process, reduced clean room requirements, and low cost equipment requirements.

B71-10249
LASER VIBRATION ANALYZER
 FOSTER, J. V.
 JUL. 1971 SEE ALSO B70-10439, B71-10145, NASA-CR-985
 XAC-01670

Instrument system uses laser and optical heterodyne receiver to measure Doppler phase shifts produced on a laser beam by the deflection of the vibrating surface of a structure under test or in operation.

B71-10252
OPTICAL PROBING OF SUPERSONIC FLOWS WITH STATISTICAL CORRELATION
 FUNK, B. H.
 AUG. 1971 SEE ALSO NASA-TN-X-53870
 M-PS-20642

Remote sensing tool reliably measures statistical properties of supersonic turbulence. Tool neither affects nor is adversely affected by flow field. Device determines characteristics of supersonic flow with optical system and provides method and apparatus for separating translational and rotational motions of turbulent structures in supersonic flow.

B71-10260
THERMAL HELIOTROPE - A PASSIVE SUN-TRACKER
 BYXBEE, R. C./LOCKHEED MISSILES AND SPACE CO./
 JUL. 1971
 GSFC-10945

Continuous sun tracking device consists of helical bimetallic coil and control mechanism. Coil produces torque and angular displacement with temperature change, and acts as device's driving element. Control mechanism, concentric shading mechanism containing bimetallic sensor coil, controls tracking rate and provides for reset cycle.

B71-10262
SURVEY OF HEAT TRANSFER TO NEAR CRITICAL FLUIDS
 HENDRICKS, R. C. SIMONEAU, R. J. SMITH, R. V./NBS/
 JUL. 1971 SEE ALSO NASA-TN-D-5886
 LEWIS-11289

Survey topics include - heat transfer boundaries of near critical region, free, natural, and forced convection experiments, oscillations, geometric effects, parameters which appear to be significant to heat transfer in critical region, and theories which have been proposed for region.

B71-10264
DURABLE CATHODES FOR HIGH-POWER INERT-GAS ARCS
 DECKER, A. J. GETTLEMAN, C. C. GOLDMAN, G. C. HALL, J. H. POLLACK, J. L.
 AUG. 1971

LEWIS-11162
 Cathode design minimizes evaporation of electrode material which may deposit on associated optical surfaces. It also results in stable operation and precise positioning of arc relative to optical collector. Innovation applies to high power light sources and to arcs used in industrial furnaces.

B71-10265
VARIABLE RATIO BEAM SPLITTER FOR LASER APPLICATIONS
 BROWN, R. M.
 AUG. 1971
 ARC-10391

Beam splitter employing birefringent optics provides either widely different or precisely equal beam ratios, it can be used with laser light source systems for interferometry of lossy

media, holography, scattering measurements, and precise beam ratio applications.

B71-10269
DYNAMIC RESPONSE OF VISCOUS COMPRESSIBLE FLUIDS IN RIGID TUBES
 GOLDSCHMIED, F. R.
 AUG. 1971
 M-PS-20542

Data on experimental verification of Iberall's analysis applies to such problems as pressure sensing, pneumatic control circuits with bellows, measuring irregular shaped volumes, and transmitting fluid power by pulsating flow.

B71-10272
COMPRESSED GAS HANDBOOK
 COTA, R. A. KUNKLE, J. S. WILSON, S. D.
 AUG. 1971 SEE ALSO NASA-SP-3045
 KSC-10662

Handbook includes thermodynamic and related fluid flow data required to analyze high pressure compressible and incompressible fluid systems. Some theory and applications include thermodynamic fundamentals, gas behavior, adiabatic and isentropic flow, shock waves, flow measurement, and adiabatic and isothermal friction flow in pipes.

B71-10273
APPROXIMATE PROPERTIES OF THE RESPONSE OF NONLINEAR DYNAMIC SYSTEMS TO STOCHASTIC INPUTS
 ZIRKLE, L. D./TEX. UNIV./
 AUG. 1971
 M-PS-20717

Indirect method considers effect of nonlinearity and obtains approximate probability densities of certain characteristics, from these densities various statistical properties are calculated. Direct method determines response moments directly. Neither method is restricted by system motion with regard to whether or not it is stationary.

B71-10283
IMPROVED CHARGED-PARTICLE ANALYZER - A CONCEPT
 DINEFF, J.
 AUG. 1971
 XAC-05506

Device utilizes concept that charged-particle analysis is achievable by applying sinusoidal voltage across two conductive deflection plates with predetermined curvature and constant spacing to define selective passageway for charged particles to be analyzed. Four advantages of improved device are cited.

B71-10311
RADIAL HEAT FLUX TRANSFORMER
 BASIULIS, A./RCA/ BUZZARD, R. J.
 AUG. 1971
 NPO-10828

Unit moves heat radially from small diameter shell to larger diameter shell, or vice versa, with negligible temperature drop, making device useful wherever heating or cooling of concentrically arranged materials, substances, and structures is desired.

B71-10333
VIBRATION ANALYSIS BY TIME-AVERAGE HOLOGRAPHY
 APRAHAMIAN, R./TRW, INC./ EVENSEN, D. A.
 SEP. 1971 SEE ALSO NASA-CR-1671
 LANGLEY-10614

Method photographs vibration modes as high as 100 kHz. Technique also measures vibration decay and damping characteristics. Compensation techniques for structural size limitations and for background noise excitations are discussed.

B71-10335
FLAME ZONE OF A COMPOSITE PROPELLANT EXPANDED BY A LASER SOURCE
 FRIEDMAN, R. HERTZBERG, M. MC HALE, E. VON ELBE,
 G./ATLANTIC RES. CENTER/
 SEP. 1971
 LANGLEY-10660

Technique scales flame structure linearly with gas kinetic mean free path, which increases two to three orders of magnitude as pressure decreases

03 PHYSICAL SCIENCES

like amount. Kinetic and transport time scales expand in proportion so that regression rates for laser-induced flames are two to three orders of magnitude slower.

B71-10340
LIQUID-HYDROGEN/NUCLEAR-RADIATION RESISTANT SEALS
VAN AUKEN, R./WHITTIER CORP./
SEP. 1971
M-FS-21364

Seal employs aromatic heterocyclic polymer, polyquinoxaline, and features resin starved laminate consisting of alternate layers of woven glass fabric and polymer film. Design gives gasket a mechanical spring characteristic, eliminating cold flow and resulting in elastic recovery when gasket is unloaded.

B71-10343
REMOTE CONTROL RADIOACTIVE-WASTE REMOVAL SYSTEM USES MODULATED LASER TRANSMITTER
BURCHER, E. E. KOPIA, L. P. ROWLAND, C. W. SINCLAIR, A. R.
SEP. 1971
LANGLEY-10311

Laser remote control system consists of transmitter, auto tracker, and receiver. Transmitter and tracker, packaged together and bore sighted, constitute control station, receiver is slave station. Model has five command channels and optical link operating range of 110 m.

B71-10350
A STUDY OF NITRIDE DEVICES FOR COMPUTER MEMORY APPLICATIONS
RABURN, W. D./ALA. UNIV./
SEP. 1971
M-FS-20971

Metal-nitride-oxide-silicon /MOS/ capacitors act like metal-nitride-silicon /MNS/ capacitors with extra interface where sheet of charge can be stored in slow states. Flatband voltage shifts over a wide range by adjusting store charge density.

B71-10351
STATISTICAL ANALYSIS TABLES FOR TRUNCATED OR CENSORED SAMPLES
COHEN, A. C./GA. UNIV./ COOLEY, C. G.
SEP. 1971 SEE ALSO NASA-CR-61330
M-FS-21024

Compilation describes characteristics of truncated and censored samples, and presents six illustrations of practical use of tables in computing mean and variance estimates for normal distribution using selected samples.

B71-10352
VIBRATION TESTING AND ANALYSIS USING HOLOGRAPHY
INNOVATOR NOT GIVEN /GCO, INC./ SEP. 1971 SEE ALSO NASA-CR-103053
M-FS-21050

Time average holography is useful in recording steady state vibrational mode patterns. Phase relationships under steady state conditions are measured with real time holography and special phase shifting techniques. Data from Michelson interferometer verify vibration amplitudes from holographic data.

B71-10353
LITERATURE REVIEW AND EXPERIMENTAL INVESTIGATION OF HEAT PIPES
BARSCH, W. O./PURDUE UNIV./ SCHOENHALS, R. J.
VISKANTA, R. WINTER, E. R. F.
SEP. 1971 SEE ALSO NASA-CR-102943
M-FS-21074

Tests on heat pipes determine operational limits, external boundary conditions, noncondensable gas effects, startup behavior, and geometric configurations. Experiment consists of design, construction, and testing of an apparatus for measuring wick properties, conventional heat pipes and coplanar heat pipes.

B71-10357
OPTIMUM DOPING ACHIEVES HIGH QUANTUM YIELDS IN GAA PHOTOEMITTERS

SONNENBERG, H./SYLVANIA ELECTRON. SYSTEMS/
SEP. 1971
M-FS-20962

Experimental data indicate that optimum doping exists. Measured quantum yield curves indicate optimum overall response is obtained in GaAs emitters with doping in high 10 to the 18th power per cu cm range. Doping for optimum response is not necessarily in this range.

B71-10364
INSULATION ASSEMBLY USES CRYOPUMPING TO REDUCE HEAT TRANSFER IN CRYOGENIC LIQUID LINE
MURSINNA, R. C./ANETEC/STRAZA/
SEP. 1971
KSC-10518

Flush joint coupling using foil jacketed annular cone, backfilled with carbon dioxide, eliminates inherent connection problems of conventional bayonet type joints used for vacuum jacketed assemblies.

B71-10378
SIMPLE SPECTROSCOPE USED WITH SOLID STATE IMAGE AMPLIFIER OVER WIDE SPECTRAL RANGE
BROWN, R. L., SR.
OCT. 1971 SEE ALSO B68-10363
M-FS-21345

Prism plus image amplifier panel provides visual image of many infrared spectral lines from carbon arc impregnated with metal compound. Different metal compounds generate various desired spectra. Panel also aligns and focuses simple spectroscopes for detecting spectral lines inside and outside visible region.

B71-10383
HIGH DENSITY PLASMA GUN GENERATES PLASMAS AT 190 KILOMETERS PER SECOND
ESPY, P. M.
OCT. 1971
M-FS-20589

Gun has thin metal foil disc which positions or localizes gas to be ionized during electrical discharge cycle, overcoming major limiting factor in obtaining such plasmas. Expanding plasma front travels at 190 km/sec, compared to plasmas of 50 to 60 km/sec previously achieved.

B71-10385
SUPERCONDUCTOR TRANSITION TEMPERATURES STUDY
BOZOWSKI, S./RCA/ GITTLEMAN, J. T. HANAK, J. J. PELLICANE, J. P.
OCT. 1971 SEE ALSO NASA-CR-110432
M-FS-21247

Compounds having beta tungsten structure exist as solid solutions over composition range of several percent. However, for most of these compounds, relationship between composition and superconducting transition temperature is not known.

B71-10388
IMPROVED ELECTRON EMITTER
NAKANISHI, S.
OCT. 1971
LEWIS-10814

Emitter applies to devices in which a plasma is generated by electron bombardment. Device is conventional hollow cathode modified by addition of integral keeper cap containing small aperture which encloses outlet of the cathode and is held in position by ceramic tube.

B71-10395
TONE-BURST TECHNIQUE MEASURES HIGH-INTENSITY SOUND ABSORPTION
POWELL, J. G./LING-TECHCO-VOUGHT, INC./ VAN HOUTEN, J. J.
OCT. 1971 SEE ALSO NASA-CR-1698
LANGLEY-10667

Tone-burst technique, in which narrow-bandwidth, short-duration sonic pulse is propagated down a standing-wave tube, measures sound absorbing capacity of materials used in jet engine noise abatement. Technique eliminates effects of tube losses and yields normal-incidence absorption coefficient of specimen.

B71-10406

OPACIFIED FIBROUS THERMAL INSULATION
CHAMBELLAN, R. E. MC GREW, J. L./MARTIN MARIETTA
CORP./

NOV. 1971

LEWIS-11235

Lightweight, opacified, glass fiber batting for high temperature insulation in cryogenic tanks has lower apparent thermal conductivity than untreated insulations. Decrease results from impeding the transmission of radiant energy without increasing the solid conductance of the material.

B71-10425

ELEMENTS OF ORBIT-DETERMINATION THEORY - TEXTBOOK
SOLLOWAY, C. B.

NOV. 1971

NPO-11466

Text applies to solution of various optimization problems. Concepts are logically introduced and refinements and complexities for computerized numerical solutions are avoided. Specific topics and essential equivalence of several different approaches to various aspects of the problem are given.

B71-10427

VIRTUAL-IMAGE DISPLAY SYSTEM FOR FLIGHT SIMULATORS
CHASE, W. D.

NOV. 1971

ARC-10175

Dual TV monitor and collimated lens system in windscreens of standard aircraft cockpit simulator permits both pilot and copilot to simultaneously view three dimensional presentation. Proper design of complete system permits depth and viewpoint of visual displays to be accurately presented.

B71-10432

THERMAL SCALE MODELING

MAC GREGOR, R. K./BOEING CO./

NOV. 1971 SEE ALSO NASA-CR-102671

N-PS-21268

Complex system study data indicate that factors associated with multilayer insulation pose major problem in scale modeling, that numerical analysis aids correction for known compromises of scaling criteria, and that probable errors in scale modeling experiments fall within range predicted by statistical analysis.

B71-10436

TABLE FOR ESTIMATING PARAMETERS OF WEIBULL
DISTRIBUTION

MANN, H. R./N. AM. ROCKWELL CORP./

NOV. 1971

N-PS-18817

Table yields best linear invariant /BLI/ estimates for log of reliable life under censored life tests, permitting reliability estimations in failure analysis of items with multiple flaws. These BLI estimates have uniformly smaller expected loss than Gauss-Markov best linear unbiased estimates.

B71-10454

IMPROVED PLASMA ACCELERATOR

CHENG, D. Y.

NOV. 1971

ARC-10109

Converging, coaxial accelerator electrode configuration operates in vacuum as plasma gun. Plasma forms by periodic injections of high pressure gas that is ionized by electrical discharges. Deflagration mode of discharge provides acceleration, and converging contours of plasma gun provide focusing.

B71-10470

PSYCHROMETRIC CHART FOR PHYSIOLOGICAL RESEARCH

CHAMBERS, A. B.

NOV. 1971

ARC-10394

Chart facilitates use of graphical techniques for solving problems involving thermodynamic properties of moist air. The properties are presented, and their units of measurement are listed. Chart presenting conditions at standard atmosphere pressure at sea level is most useful.

B71-10478

IMPROVED MOLECULAR SORBENT TRAP FOR HIGH-VACUUM
SYSTEMS

KNECHTEL, E. D. PITTS, W. C.

DEC. 1971

ARC-10056

Closed cycle refrigeration loop in which trays holding molecular sorbent are made to serve as cooling baffles improves the performance of high vacuum systems. High performance is obtained with almost no decrease in pumping speed.

B71-10484

COMPUTERIZED METHODS FOR TRAFFICABILITY ANALYSIS

LEWANDOWSKI, G. M./CORNELL, AERON. LAB., MC ADAMS, H.
T. REESE, P. A.

DEC. 1971 SEE ALSO NASA-CR-1881

N-PS-21423

Computer program produces trafficability maps displaying terrain characteristics in digital form for computer analysis. Maps serve as aid to vehicular operation and highway planning based on maneuverability parameters.

B71-10494

MODIFIED CAMERA RECORDS LENS SETTINGS ON FILM

THOMPSON, R. E.

DEC. 1971

MSC-12363

Camera is modified by inserting optical imaging system between lens and film. This system requires no electrical power, is low in weight, and adds nothing to external size of the camera.

B71-10506

SHUTTER DESIGN FOR STEREOSCOPIC CAMERA

INNOVATOR NOT GIVEN /EASTMAN KODAK CO./ DEC. 1971

MSC-13613

Shutter design consists of two axially mounted spring driven rotating blades with two lenses mounted between the blades. Features include excellent repeatability and flash synchronization. Design permits packaging in small volume and is beneficial where focal distance, magnification, and exposure time are fixed.

B71-10519

ANEMOMETER CALIBRATOR

BATE, T./INCA ENG. CORP./ CALKINS, D. E. PRICE, P.
VEIKINS, O.

DEC. 1971

N-PS-21424

Calibrator generates accurate flow velocities over wide range of gas pressure, temperature, and composition. Both pressure and flow velocity can be maintained within 0.25 percent. Instrument is essentially closed loop hydraulic system containing positive displacement drive.

B71-10526

MULTICHAMBER CONTROLLABLE HEAT PIPE

SHLOSINGER, A. P./TRW SYSTEMS GROUP/

DEC. 1971 SEE ALSO NASA-CR-1400

ARC-10199

Valve throttles transfer of vapor between heat input surface and heat rejection surface of heat pipe to control rate of transfer of energy. Valve is operated by control signals which sense temperatures or pressures.

B71-10527

IMPROVING LASER BEAM COHERENCE - A CONCEPT

HEFLINGER, L. O./TRW SYSTEMS GROUP/

DEC. 1971 SEE ALSO NASA-CR-114274

ARC-10417

Laser frequencies may be reduced to single frequency or selected frequencies. For single frequency performance, spacing of frequencies falls in natural line width. For two or more frequencies, thicker spacing is used. Configuration adapts to operation with Kerr or Pockel cell for Q switching.

B71-10534

MULTIFREQUENCY LASER BEAMS FOR HOLOGRAPHIC CONTOURING

HEFLINGER, L. O./TRW SYSTEMS GROUP/ WUERKER, R. F.

DEC. 1971 SEE ALSO NASA-CR-114274

ARC-10341

03 PHYSICAL SCIENCES

Pulsed ruby laser emits two optical frequencies simultaneously so holographic recordings of test object give images showing desired range contours. Process enables generation of contour maps for practical applications such as gaging size and shape of mechanical parts and other structures.

B71-10536
MINIATURE CARBON DIOXIDE SENSOR
MC HENRY, T. F./BARNES ENG. CO./
DEC. 1971
MSC-13332

Sensor with no moving parts measures carbon dioxide partial pressures of 0 to 40 mm Hg for total pressures up to 14 psia with a full scale accuracy of 5 percent.

B72-10001
IMPROVED LABORATORY GRADIOMETER CAN BE A FIELD SURVEY INSTRUMENT

L. G. D. Thompson (Gen. Oceanology, Inc.), M. H. Houston (Gen. Oceanology, Inc.), D. A. Rankin (Gen. Oceanology, Inc.), and E. M. Yavner (Gen. Oceanology, Inc.)
1972

MSC-13980

Improvements made to quartz gradiometer minimize or eliminate disturbing effects from known error sources and permit sensitivity of + or - 1 times 10 to the minus 9th power/sec sq or better and measuring accuracy of + or - 5 times 10 to the minus 9th power/sec sq.

B72-10003
URBAN AIR POLLUTION DISPERSION MODEL

J. J. Robert
1972

AEC-10004

Three-dimensional integrated puff model simulates smoke plume dispersion processes and estimates pollutant concentration during periods of low wind speed. Applications for model are given.

B72-10004
EFFECT OF THERMAL DISCHARGES ON THE MASS ENERGY BALANCE OF LAKE MICHIGAN

J. G. Asbury
1972

AEC-10013

Effects of electric utility generating stations and steel mills on physical quality of Lake Michigan are considered. Study is based on extension of heat exchange model developed by Edinger and Geyer for small lakes and cooling ponds.

B72-10008
PROPELLANT-POWERED ACTUATOR FOR GAS GENERATORS

M. J. Makowski (TRW Systems Group)
1972

ARC-10484

Hydrazine operated monopropellant generators are used for spacecraft rocket engines and propellant pressurization systems. Measured work output of monopropellant actuators compares favorably with output of squib-type actuators.

B72-10016
REMOTE SENSING X-RAY SPECTROMETER

I. Adler (NASA, Goddard Space Flight Center), J. Trombka (NASA, Goddard Space Flight Center), H. Gursky (Am. Sci. and Eng., Inc.), and P. Gorenstein (Am. Sci. and Eng., Inc.)
1972

MSC-13978

Spectrometer measures chemical composition of lunar rocks by remote sensing from orbit and senses lunar X-rays produced by interaction of solar X-rays and elements on the lunar surface. Instrument features high sensitivity, data handling system that accumulates and prepares data for telemetry, and automatic calibration.

B72-10020
SOLAR EXPERIMENT ALIGNMENT SYSTEM

D. L. Fain (Exotech, Inc.)
1972

ARC-10471

Sensor system determines absolute alignment of optical axis of experiment package relative to solar vector and provides control information to permit pointing experiment anywhere on solar disc to absolute accuracy of the order of two arc seconds in center and five arc seconds on limb.

B72-10026
RISING-PLATE RHEOMETER

R. H. Globus (Aerojet Liquid Rocket Co.) and E. M. VanderWall (Aerojet Liquid Rocket Co.)
1972

ARC-10524

Technique eliminates hazards of handling propellants and permits determination of structure index of gel by remote control. Rheometer weighs cone of propellant gel which remains on a disc that has been slowly pulled out of the gel.

B72-10033
ANALOG TABLE LOOK-UP DEVICE IDENTIFIES UNKNOWN TERRAIN

R. H. Dye (Bendix Corp.)
1972

MSC-13816

Table provides a probability map defining unknown terrain in terms of known terrain inputs. Device consists of analog transformation network and flying spot scanner. Information is useful to manufacturers and users of remote sensing equipment and applies to automated quality control.

B72-10034
A LIQUID RADIATION DETECTOR WITH HIGH SPATIAL RESOLUTION

L. Alvarez (Calif. Univ.)
1972

MSC-13965

Detector, using point anode, minimizes problem of oblique tracks by permitting construction of very thin counter. Detector is useful in cosmic ray and high energy physics research and X-ray and neutron diffraction technology.

B72-10039
HYDRAULIC MODELING OF HEAT DISPERSION IN LARGE LAKES

E. Silberman and H. Stefan
1972

AEC-10003

Case studies of hydraulic models are described for four major generating plants, including information and maps of thermal distribution. Information is of interest to agencies involved in thermal pollution control.

B72-10048
PULSED HIGH-POWER ARC HEATER WITH IMPROVED CATHODE AND TRIGGERING MECHANISM

R. Dethlefsen (Gen. Dyn./Convair) and J. Tinkham (Gen. Dyn./Convair)
1972 See also NASA-CR-1246

ARC-10173

System employs pulsed, constricted arc heater capable of multi-MW power, permitting quasi-stationary flow conditions during latter half of pulse of about 5 msec. System description is given.

B72-10053
INCREASING THE RESPONSE OF PIN PHOTODIODES TO THE ULTRAVIOLET

C. N. Burrous and E. E. Whiting
1972

ARC-10274

Solid state device uses sapphire windows and avoids coatings which absorb ultraviolet radiation and ultimately alter detector geometry. Ultimate solution for ultraviolet response is geometry with maximum peripheral area and horizontal field structure to draw out photon induced current carriers.

B72-10082
VELOCITY ACCELERATOR FOR PARTICLES

A. H. Wilson
 1972

NPO-11349

Sheet explosive and metal tube, fitted to the inner periphery of a cam-shaped chamber, accelerate particles to velocities nearing 20 km/sec to evaluate efficacy of spacecraft meteoroid shields.

B72-10083
**NEMATIC LIQUID CRYSTALS FOR OPTICAL SHUTTERS:
 A CONCEPT**

R. E. Imus
 1972

NPO-11367

Nonmechanical shutter utilizes nematic crystals to attenuate illumination, thus protecting light-sensitive devices such as vidicon or image orthicon tubes and phototubes. Opacity of liquid crystals is controlled by photosensor.

B72-10085
**OXYGEN-LAYER STRUCTURE IMPROVES LITHIUM-DOPED
 SILICON SOLAR CELLS**

P. A. Iles (Globe-Union, Inc.)
 1972

NPO-11403

Technique fabricates hybrid structure utilizing low oxygen silicon as bulk cell material and shallow overlay of silicon with high oxygen concentration.

B72-10087
GAS LEAK-DETECTION SYSTEM

F. G. Roselli-Lorenzini
 1972

NPO-11405

Data monitoring of gas leakage in satellites and spacecraft is facilitated by adding gaseous radioisotopes to cold compressed gas and mounting a detector in the thrust nozzle.

B72-10107
**MANGANESE BISMUTH THIN FILM FOR LARGE CAPACITY
 DIGITAL MEMORIES**

D. Chen (Honeywell, Inc.), R. L. Aagard (Honeywell, Inc.), F. M. Schmit (Honeywell, Inc.), and T. S. Liu (Honeywell, Inc.)
 1972

M-FS-21246

Material and system research defines accurate memory characteristics in regard to write, read, erase and data operations of manganese bismuth materials.

B72-10113
HEXAPOLE MAGNET FIELD ANALYSIS

R. F. Lacey (Hewlett-Packard Co.)
 1972

GSFC-10995

Method rotates magnet about a wire loop of rectangular shape placed inside the pole tips and measures induced loop voltage with a wave analyzer. Quantitative field characteristics are determined from voltage induced at various harmonics of the rotation frequency.

B72-10123
MASS SEPARATOR FOR LOW VELOCITY IONS

H. J. King (Hughes Aircraft Co.)
 1972 See also NASA-CR-73443

ARC-10375

Separator provides broad beam of protons free of other charged species to simulate the solar wind in experiments designed to determine effect on materials.

B72-10127
**LOW TEMPERATURE CATALYTIC IGNITION OF HYDRO-
 GEN AND OXYGEN**

H. H. Voge (Shell Develop. Co.), T. J. Jennings (Shell Develop. Co.), and W. E. Armstrong (Shell Develop. Co.)
 1972

ARC-10492

Catalyst composed of 32 percent iridium metal supported on granular alumina is most active and most stable of platinum metal catalysts. Catalyst consistently induces reactions at temperatures as low as 78 K.

B72-10128
OPTICAL SHUTTER FOR USE IN SHOCK TUBES

J. O. McClenahan
 1972

ARC-10516

Thin metal shutter that is forced into angled optical slit isolates spectrograph from high speed shock tube both optically and mechanically so neither radiation nor particulate material enters spectrograph.

B72-10130
HIGH SOLAR INTENSITY RADIOMETER

J. R. Jack and E. W. Spisz
 May 1972 See also NASA-TM-X-2412

LEWIS-11533

Silicon solar cells are used to measure visible radiant energy and radiation intensities to 20 solar constants. Future investigations are planned for up to 100 solar constants. Radiometer is small, rugged, accurate and inexpensive.

B72-10132
**GLASS TECHNOLOGY INVOLVED IN THE MANUFACTURE
 OF MAGNETOMETER COMPONENTS**

G. Bergen
 1972

GSFC-11283

Glass technology has developed quicker and less costly techniques in sealing and vacuum processing which result in improved lamps and bulbs, thus producing a less costly and more reliable instrument package.

B72-10140
**GRAVITATIONAL GRADIOMETER MEASURES MASS
 CHANGES**

C. C. Bell (Hughes Res. Labs.)
 1972

M-FS-20814

Differential angular accelerometer, utilizing complex geometric configurations and spring-coupled rotating masses, demonstrates feasibility of measuring mass distributions of celestial bodies by detecting spatial gradients of their fields from orbiting vehicles. Applications include mineralogical surveying, geodetic engineering, and solar system investigation.

B72-10143
**ATMOSPHERIC DENSITY VARIATIONS RELATED TO
 INTERNAL GRAVITY WAVES**

E. B. Miller (Northrop Corp.)
 1972

M-FS-21637

Report describes method for estimating gravity-wave density variation from wind speed profile between 60 and 100 km. Single profile is inadequate for valid determination of mean or background values and ensemble averaging over several related profiles is recommended.

B72-10146
**LOW TEMPERATURE SCALE FOR A 1 TO 20 DEGREE
 KELVIN REGION**

T. C. Cetas and C. A. Swenson
 1972

AEC-10007

New temperature scale, accurate to better than plus or minus 0.001 Kelvin over low temperature region, is based on National Bureau of Standards 1955 platinum resistance thermometer scale and utilizes precise susceptibility measurements on two paramagnetic salts.

B72-10147
**CONICAL ELECTROMAGNETIC RADIATION FLUX CON-
 CENTRATOR**

E. R. Miller
 May 1972

M-FS-21613

03 PHYSICAL SCIENCES

Concentrator provides method of concentrating a beam of electromagnetic radiation into a smaller beam, presenting a higher flux density. Smaller beam may be made larger by sending radiation through the device in the reverse direction.

B72-10148

DEVICE FOR MEASURING ELECTRIC FIELDS

S. H. Levine (Northrop Corp. Labs.) and S. R. Harrison (Northrop Corp. Labs.)

1972 See also NASA-CR-73177

ARC-10164

Measurement of low-intensity electric fields in space and in presence of weak magnetic fields is accomplished by utilizing a device which permits determination of the extent a beam of cesium ions is deflected by an electric field.

B72-10151

ADVANCES IN INDUCTION-HEATED PLASMA TORCH TECHNOLOGY

J. W. Poole (Humphreys Corp.) and C. E. Vogel (Humphreys Corp.)

May 1972 See also B69-10185; NASA-CR-1764;

NASA-CR-1804

LEWIS-11354

Continuing research has resulted in significant advances in induction-heated plasma torch technology which extend and enhance its potential for broad range of uses in chemical processing, materials development and testing, and development of large illumination sources. Summaries of these advances are briefly described.

B72-10152

ADVANCED INFRARED PHOTOMULTIPLIER

H. Sonnenberg (Sylvania Electron. Systems-West) and J. D. Taynal (Sylvania Electron. Systems-West)

1972

M-FS-20941

Photocathode for the 8500 angstrom through 9000 angstrom range, improving efficiency by an order of magnitude, is achieved with a gallium arsenide cesium oxide photocathode. Protection of the GaAs surface from contamination during bake-out is another important function.

B72-10154

METHOD OF DETERMINING THERMAL CONDUCTIVITY IN MULTI-LAYER INSULATION SYSTEMS

K. G. Scroggins (Brown Eng. Co.)

May 1972

M-FS-20213

Repeatable nondestructive method prepares multilayer cryo-insulation material for thermal conductivity measurements. Data acquired are volume of boil-off gas, barometric pressure, gas temperature, chamber pressure, and differential pressure between extremities.

B72-10160

PARTICLE DETECTION BY A LIGHT-SCATTERING TECHNIQUE

S. Kormanyos (Bendix Corp.) and J. Mastroeni (Bendix Corp.)

1972

ARC-10384

Instrument measures concentration of small particles in aqueous medium in terms of amount of light scattered and degree to which light transmission is attenuated. Sensitivity to small particles is optimized because both scattered and transmitted illumination levels are detected by photodiodes.

B72-10166

CELL FOR ELECTROLYSIS OF WATER VAPOR

V. A. Celino (Hamilton Standard) and G. Roebelen (Hamilton Standard)

1972

ARC-10521

Electrolytic cells regenerate oxygen from the water vapor in the air of closed-loop life-support system and remove water vapor from air circulated through them. Water is converted into oxygen

and hydrogen; the oxygen is returned to the air, the hydrogen is vented or used elsewhere.

B72-10169

FEEDBACK CONTROL OF VARIABLE CONDUCTANCE HEAT PIPES

W. B. Bienert (Dynatherm Corp.)

1972 See also NASA-CR-73475

ARC-10460

Feedback system monitors source temperature and makes necessary changes of area available for heat rejection by adjusting storage volume of noncondensable gas and position of vapor/gas interface.

B72-10170

VIBRATING RIBBON BOLOMETER: A CONCEPT

J. Dimeff

1972

XAC-10768

Incident electromagnetic radiation pulses maintain bolometer's sensitive element in state of resonant oscillation and correlate amplitude of oscillation with incident radiation power. Bolometer can be employed with other devices for detecting motion of ribbon.

B72-10171

ANNULAR OBJECTIVE APERTURES IMPROVE RESOLUTION OF ELECTRON MICROSCOPES

K. Heinemann and H. R. Poppa

1972

ARC-10448

Hollow-cone illumination techniques, using an annular objective aperture located behind back focal plane of objective lens, increase image contrast and minimize chromatic aberrations.

B72-10180

CRYOGENIC GEL FLOW VISCOMETER

R. H. Globus (Aerojet Liquid Rocket Co.) and E. M. VanderWall (Aerojet Liquid Rocket Co.)

1972

ARC-10523

Coiled section of tubing measures viscous properties of gelled cryogenic propellants under conditions closely resembling flow in rocket engine systems. Characteristic flow curve provides data necessary for the design of prototype hardware systems using the liquid or gel of interest.

B72-10188

RESTARTABLE HEAT PIPE

A. P. Shlosinger (TRW Systems Group)

1972

ARC-10198

Inclusion in heat pipe of auxiliary working fluid which has considerably lower freezing point than main working fluid enables easy starting after main working fluid has been cooled to or below freezing point.

B72-10190

HAND-HELD PHOTOMICROSCOPY SYSTEM

H. R. Zabower

May 1972

ARC-10468

Photomicroscopy system, with simple optics and any standard microscope objective, is used with any type of motion picture, still, or television camera system. Device performs well under difficult environmental conditions and applies to work in ecological studies, field hospitals, and geological surveys.

B72-10192

SOLAR SENSOR WITH AUTOCOLLIMATOR

D. L. Fain (Exotech, Inc.), J. M. Hall (Exotech, Inc.), and D. F. Johnson (Exotech, Inc.)

May 1972 See also NASA-CR-73260

ARC-10148

Monolithic structure, consisting of fused quartz fabricated solar sensor and autocollimator, measures angle between reference surface on spacecraft and solar vector. Device compensates for

errors caused by changes in the alignment of its mountings or component parts. Integrated concept is advantageous whenever sensor mounting error constitute problems.

B72-10196
WIDE-RANGE DYNAMIC PRESSURE SENSOR

J. Dimeff and J. W. Lane
 May 1972 See also NASA-SP-5020
ARC-10263

Transducer measures pressure by sensing the damping of a vibrating diaphragm immersed in the atmosphere to be measured. Improved sensor can be included in rugged, lightweight package for use aboard aircraft, meteorological vehicles, and space probes.

B72-10198
NONDISPERSIVE INFRARED ANALYZER FOR SPECIFIC GASES IN COMPLEX MIXTURES

J. Dimeff, R. W. Donaldson, Jr., W. D. Gunter, and G. J. Deboo
 May 1972
ARC-10308

Analyzer identifies and measures particular diatomic or polyatomic gases in complex gas mixtures. Mixing of absorption effects on light energy passing through gases to photodetector produces a signal component that is related to the absorption caused by reference-gas component in unknown gas mixture.

B72-10202
FABRICATION OF LARGE CERAMIC ELECTROLYTE DISKS

S. A. Ring (Appl. Electrochem., Inc.)
 May 1972
ARC-10320

Process for sintering compressed ceramic powders produces large ceramic disks for use as electrolytes in high-temperature electrolytic cells. Thin, strain-free uniformly dense disks as large as 30 cm squared have been fabricated by slicing ceramic slugs produced by this technique.

B72-10206
DIATOMIC INFRARED GASDYNAMIC LASER PERMITS SELECTION OF WAVELENGTHS

R. L. McKenzie
 May 1972 See also NASA-TM-X-62006
ARC-10370

Laser utilizes infrared-active diatomic gas which emits laser energy from numerous upper vibrational levels. Wavelengths depend on particular vibration-rotation transitions and have been obtained throughout the band between 4.78 and 5.4 microns, for example, when using carbon monoxide.

B72-10207
SIMPLE GAS CHROMATOGRAPHIC SYSTEM FOR ANALYSIS OF MICROBIAL RESPIRATORY GASES

G. C. Carle
 May 1972
ARC-10403

Dual column ambient temperature system, consisting of pair of capillary columns, microbead thermistor detector and micro gas-sampling valve, is used in remote life-detection equipment for space experiments. Performance outweighs advantage gained by utilizing single-column systems to reduce weight, conserve carrier gas and operate at lower power levels.

B72-10208
HYDROGEN ELIMINATOR

R. J. Kiraly (TRW, Inc.)
 May 1972
ARC-10408

Vented hydrogen is converted into water by mixing hydrogen with sufficient air to ensure that a flame cannot be maintained and then passing it through a reactor containing palladium catalyst; reaction takes place at relatively low temperature. Device may have wide range of applications for air purification.

B72-10209
SENSITIVE HOLOGRAPHIC DETECTION OF SMALL AERODYNAMIC PERTURBATIONS

L. O. Heflinger (TRW Systems Group)
 May 1972 See also NASA-CR-114274
ARC-10422

Phase modulations enhance the sensitivity of holographic techniques for detecting disturbances which are caused by variations in gas density of the order of 1/10 wavelength or less. In the readout, subject perturbations show up as brightenings on a dark background.

B72-10212
RADIOISOTOPE THERMIONIC POWER SUPPLY FOR SPACECRAFT

W. G. Homeyer (Gulf Gen. Atomic), A. J. Gietzen (Gulf Gen. Atomic), and C. A. Heath
 May 1972
ARC-10438

Power supply design for unmanned electric propulsion missions to outer planets utilizes a store of curium-244 in compact array of capsules as energy source. Supply subassemblies are: heat source, converter equipment which supplies power, and safety equipment. System is designed for a 72,000 hour mission.

B72-10217
LIQUID-HELIUM-COOLED MICHELSON INTERFEROMETER

G. C. Augason and N. Young (Block Eng.)
 May 1972
ARC-10554

Interferometer serves as a rocket-flight spectrometer for examination of the far infrared emission spectra of astronomical objects. The double beam interferometer is readily adapted to make spectral scans and for use as a detector of discrete line emissions.

B72-10221
SILVER-CHLORINE FUEL CELL: A CONCEPT

M. Lieberman (ESSO Res. and Eng. Co.)
 1972 See also NASA-CR-94407
ARC-10491

Fuel cell regenerated by photochemical reduction enables novel slurry system to transport particles of reduced silver between regenerator section and anode. Fundamental reactions which provide electrical power from the fuel cell are given.

B72-10227
SIMPLE DYNAMIC ELECTROMAGNETIC RADIATION DETECTOR

J. F. Been
 May 1972
LEWIS-11159

Detector monitors gamma dose rate at particular position in a radiation facility where a mixed neutron-gamma environment exists, thus determining reactor power level changes. Device also maps gamma intensity profile across a neutron-gamma beam.

B72-10232
IMPROVED INTENSIFYING SCREEN REDUCES X-RAY EXPOSURE

R. A. Buchanan (Lockheed Aircraft Corp.)
 May 1972
AEC-10090

X-ray intensifying screen may make possible radiographic procedures where detection speed and X-ray tube power have been the limiting factors. Device will reduce total population exposure to harmful radiation in the United States.

B72-10240
LABORATORY LEAK TESTER PROVIDES HIGH SENSITIVITY

E. G. Hayes
 May 1972
AEC-10042

Detecting unit is capable of measuring leak rates of 10 to the minus 5th power cc/sec or less. Device can be mounted in a carrying case and consists of three vacuum chambers, two pressure gages, and positive seal type control valves.

B72-10242
IMPROVED HIGH-PERFORMANCE SHOCK TUBE

03 PHYSICAL SCIENCES

W. A. Menard

Aug. 1972

NPO-11885

Mylar diaphragms in shock tubes are a major improvement over steel diaphragms. Other improvements include: better electrode design; improved flow by opening the throat and removing all constrictions; and improved driver geometry by optimizing volume and shape.

B72-10244

DIRECT ANALYSIS OF HYDROGEN/DEUTERIUM MIXTURES: A CONCEPT

H. C. Lord

Sep. 1972

NPO-11322

Fraction of deuterium/hydrogen mixture is isolated by column chromatography, ionized, and the HD+1-O band absorption measured with conventional high-resolution infrared spectrophotometer.

B72-10246

WATER CAVITY DEGASSER FOR ELECTROLYSIS CELLS

F. H. Schubert (TRW, Inc.)

Sep. 1972

ARC-10244

Degasser, a cylindrical container made of plastic thick enough to withstand operating pressures of electrolysis module, removes accumulated gases from water cavities without loss of electrolyte.

B72-10248

PRESSURE-PROBE ASSEMBLY FOR WIND TUNNELS

R. L. Warfield (Boeing Co.)

Sep. 1972

ARC-10569

Rake mounting design reduces aerodynamic-surface discontinuities to a minimum when installed in boundary layer bleed area. Mounting base is not required and, because of simplicity, rake can be manufactured at low cost.

B72-10251

AN ELECTROHYDRODYNAMIC HEAT PIPE

T. B. Jones (Colo. State Univ.)

Sep. 1972

ARC-10601

Dielectric liquid for transfer of heat provides liquid flow from the condenser section to the evaporator section in conventional heat pipes. Working fluid is guided or pumped by an array of wire electrodes connected to a high-voltage source.

B72-10259

HIGH-EFFICIENCY COLLECTOR FOR MICROWAVE TUBES

H. C. Kosmahl

Jun. 1972 See also NASA-TN-D-6093

LEWIS-11192

Depressed collector has basic configuration of a dish with a central cone and protruding spike. This geometry velocity sorts and slows the electrons down to minimum velocity at collection, and prevents backstreaming of secondaries and reflected primaries into interaction region of the tube.

B72-10260

HYBRID HOLOGRAPHIC SYSTEM

R. L. Kurtz and B. N. Norden

Jun. 1972

M-FS-20074

Improved holographic system has high degree of resolution and capability of providing a hologram of a moving object without requiring that the system have a high mechanical stability.

B72-10263

EVALUATION OF JET ENGINE NOISE

S. P. Pao (Wyle Labs.)

Jun. 1972

M-FS-21416

Three basic equations, acoustic mode and two Mach modes, characterize jet noise environments. These equations are used to predict noise generation magnitude.

B72-10270

SEPARATION OF GAS MIXTURES BY CENTRIFUGATION

C. Park and W. L. Love

1972

ARC-10449

Magnetohydrodynamic (MHD) centrifuge utilizing electric currents and magnetic fields produces a magnetic force which develops supersonic rotational velocities in gas mixtures. Device is superior to ordinary centrifuge because rotation of gas mixture is produced by MHD force rather than mechanical means.

B72-10273

OXYGEN RECLAMATION WITH SOLID OXIDE ELECTROLYTES

W. Smart (Appl. Electrochem., Inc.) and J. Weissbart (Appl. Electrochem., Inc.)

Jul. 1972 See also NASA-CR-73464

ARC-10487

Electrolyte operated at an elevated temperature in an electrolysis cell regenerates oxygen from metabolic carbon dioxide found in closed-cycle cabin atmospheres.

B72-10274

INTERFEROMETRIC ROTATION SENSOR

T. M. Walsh

Jul. 1972

ARC-10278

Sensor generates interference fringes varying in number (horizontally and vertically) as a function of the total angular deviation relative to the line-of-sight axis. Device eliminates errors from zero or null shift due to lack of electrical circuitry stability.

B72-10276

THERMAL CONTROL FOR STORAGE OF CRYOGENIC PROPELLANTS IN A COMMON-BULKHEAD TANK: A CONCEPT

G. R. Stone (Gen. Dyn./Convair)

Sep. 1972 See also B72-10277; B72-10278;

NASA-CR-109833

ARC-10558

Simple, reliable ground-hold refrigeration system for common-bulkhead tank meets design criteria and objectives for ground-hold of oxygen difluoride and diborane. System is failsafe and malfunctions can be rectified without interruption of basic system functions.

B72-10277

SAFE TRANSPORT OF DIBORANE IN A DUAL REFRIGERANT SYSTEM: A CONCEPT

G. R. Stone (Gen. Dyn./Convair)

Sep. 1972 See also B72-10276; B72-10278;

NASA-CR-109833

ARC-10559

Mobile transport system, that can be carried by truck and parked in storage area, consists of an inner container capable of holding 363 kg of diborane and an external, dual refrigeration unit which uses liquid nitrogen and Freon-14.

B72-10278

THERMAL CONTROL FOR STORAGE OF CRYOGENIC PROPELLANTS IN A MULTIPLE-TANK SYSTEM: A CONCEPT

G. R. Stone (Gen. Dyn./Convair)

Sep. 1972 See also B72-10276; B72-10277;

NASA-CR-109833

ARC-10560

Development of system for storing cryogenic propellants in multiple tank configuration is discussed. System uses single loop and closed loop features. Liquid nitrogen and Freon-14 are used as refrigerants. Diagram of equipment to show components and operation is provided.

B72-10302

MULTIPURPOSE TOP FOR LIQUID HELIUM DEWAR

R. S. Murphy and J. R. Anderholm

Sep. 1972

ARC-10533

Multipurpose top was fabricated for liquid helium Dewar flask which guards against flash vaporization of liquid helium and allows boiling temperature of liquid helium to be lowered by reduction of ambient pressure in Dewar flask. Device is rugged and simple, and does not require frequent calibrations or adjustments.

B72-10307
REDIRECTING ELECTROMAGNETIC BEAMS THROUGH WIDE ANGLES

J. Dimeff, R. M. Brown, and M. Omura
 Sep. 1972

ARC-10602

Electromagnetic wave enters reflector array consisting of grid work of metallic reflectors with each reflector obscuring a portion of its neighbors to prevent direct passage of wave through grid. Antenna movement involves reduced amplitude of angular motion and internal cancellations of translational and rotational inertias.

B72-10310
OPTICAL ENHANCEMENT OF SENSITIVITY IN LASER DOPPLER VELOCITY SYSTEMS

G. R. Grant, W. D. Gunter, Jr., and S. A. Shaw
 Sep. 1972 See also B71-10113

ARC-10653

Utilization of optical enhancement techniques prevents loss of light by reflections at the photocathode of a photomultiplier and increases signal detection sensitivity.

B72-10312
A SENSITIVE IMAGE INTENSIFIER WHICH USES INERT GAS

Q. A. Kerns (Calif. Univ.) and H. M. Miller (Calif. Univ.)
 Dec. 1972

LRL-10024

High gain optical image intensifier utilizes inert gas cavity with copper electrodes to form electron avalanches without excessive pulse voltages. Estimated optical gain for device is two times 10 to the power of seven.

B72-10314
A CRYOPUMP FOR COOLING OBJECTS AT A DISTANCE

P. J. Batson and N. Milleron
 Dec. 1972

LRL-10031

Design and construction of cryopump is reported that feeds from primary source to cool component up to 30 ft from source. Liquid oxygen or nitrogen is gravity fed through loop system to copper fibers enclosing component at room temperature where fluid boils, cools object, vaporizes and recycles through tubing loop.

B72-10317
SUNSPOT ANALYSIS AND PREDICTION

Innovator not given (Ark. Univ.) Jul. 1972

M-FS-21724

Evaluation of several procedures that apply rarely used and exotic mathematical functions yields a unique method of application of common trigonometric functions. These functions appear to produce results in the development of a mathematical model capable of describing all available sunspot data.

B72-10324
BAFFLE TO CONFINE GLOW DISCHARGE IN ION PUMP

E. S. J. Wang (McDonnell-Douglas Corp.)
 Jul. 1972

M-FS-21575

Electrically-grounded 'optically tight' baffle installed downstream from conventional metal screen prevents discharge from entering test chamber and disturbing test process.

B72-10327
A COMPACT SPECTRORADIOMETER FOR SOLAR SIMULATOR MEASUREMENTS

H. H. Seward (MIT), I. G. McWilliams (MIT), and G. A. Davidson

(MIT)

Jul. 1972

HQ-10683

Compact spectral irradiance probe has been designed and built which uses wedge filter in conjunction with silicon cell and operational amplifier. Probe is used to monitor spectral energy distribution of solar simulators and other high intensity sources.

B72-10341
ACOUSTIC SPECTRAL ANALYSIS AND TESTING TECHNIQUES

C. D. Hayes, M. D. Lamers, J. W. Shipley, and R. A. Slusser
 Jul. 1972 See also JPL-TM-33-422; JPL-TR-32-928-Rev-1; JPL-TR-32-1052; JPL-TR-32-1141

NPO-11554

Subjects covered in four reports are described including: (1) mathematical techniques for combining decibel levels of octaves or constant bandwidth; (2) techniques for determining equation for power spectral density function; (3) computer program to analyze acoustical test data; and (4) computer simulation of horn responses utilizing hyperbolic horn theory.

B72-10351
COMPOSITE MOBILE SYSTEM FOR HOLOGRAPHIC NONDESTRUCTIVE TESTING

R. L. Kurtz

Jul. 1972

M-FS-21704

Innovation provides a single system flexible enough to test objects ranging from large amplitude displacement and/or velocities down to extremely small displacements and/or velocities by making only a few minor adjustments in the component arrangements.

B72-10354
HELIUM LEAK MEASUREMENTS USING CO2 AS A CARRIER

B. C. Moore (McDonnell-Douglas Astronautics Co.) and R. G. Camarillo (McDonnell-Douglas Astronautics Co.)

Jul. 1972

M-FS-21742

Detection delay defects are omitted by using helium mass spectrometer leak detector combined with several known procedures. Technique combines carbon dioxide purging, cryogenic separating helium accumulation, and use of carbon dioxide as carrier gas.

B72-10360
ALTERNATING CURRENT LOSSES IN SUPERCONDUCTING COILS

S. L. Wipf (N. Am. Rockwell Corp.) and C. A. Guderjahn (N. Am. Rockwell Corp.)

Jun. 1972

M-FS-21129

Report examines relationship between coil loss and frequency and heat loss in coil as a function of the magnetic field H. Information is of value to manufacturers of superconducting magnets, motors and generators.

B72-10368
SONIC LIMITATIONS AND STARTUP PROBLEMS OF HEAT PIPES

J. E. Deverall, J. E. Kemme, and L. W. Florschuetz
 Jun. 1972 See also LA-4518

AEC-10036

Introduction of small amounts of inert, noncombustible gas aids startup in certain types of heat pipes. When the heat pipe is closely coupled to the heat sink, the startup system must be designed to bring the heat sink on-line slowly.

B72-10373
LASER FREQUENCY MODULATION WITH ELECTRON PLASMA

T. J. Burgess and V. R. Latorre

Jun. 1972

AEC-10079

03 PHYSICAL SCIENCES

When laser beam passes through electron plasma its frequency shifts by amount proportional to plasma density. This density varies with modulating signal resulting in corresponding modulation of laser beam frequency. Necessary apparatus is relatively inexpensive since crystals are not required.

B72-10375

OPTICAL DEVICE FOR PRODUCING COLOR LINE SCAN DISPLAY FROM MONOCHROME OSCILLOSCOPE TRACES

L. P. Kopia

Jul. 1972

LANGLEY-10896

Novel device allows generation of simultaneous color line scan from the face of a monochrome cathode ray tube. Device consists of four dichroic beam splitters, two each of red reflectance (cyan transmittance) and blue reflectance (yellow transmittance).

B72-10379

FILTER CASSETTE FOR HIGH VOLUME AIR SAMPLER

R. B. King, J. S. Fordyce, L. Rosenblum, J. Toma, J. C. Burr, Jr. (Cleveland Div. of Air Pollution Control), and B. L. Burger (EPA)

Jul. 1972

LEWIS-11469

Filter cassette eliminates or substantially reduces contamination of filter media by extraneous material and facilitates handling.

B72-10387

ROTARY SHUTTER MECHANISM CONTAINS OPTICAL ELEMENTS

A. O. Weilbach (Beckman Instr., Inc.)

Dec. 1972

GSFC-11244

Two cylindrical shutter mechanisms having fixed outer sleeves and rotating inner sleeves use single stepping motor and Geneva mechanism to sequentially move optical components into path of ultraviolet monochromator for output control to photomultiplier. Photometric and wavelength calibration sources insure shutter positions according to operational phases.

B72-10388

AN IMPROVED APOCHROMATIC WEDGE UTILIZING OPTICAL MOLECULAR CONTACT BONDING

C. M. Fewell (Sperry Rand Corp.)

Jul. 1972

GSFC-11082

Three elements of the apochromatic wedge are assembled by optical molecular contact, eliminating all difficulties and inaccuracies inherent in cement bonding.

B72-10389

TRANSMISSION OF OPTICAL FREQUENCIES WITH MINIMAL LOSSES

C. H. Townes (MIT), R. Y. Chiao (MIT), and E. M. Garmire (MIT)

Jul. 1972

HQ-10541

Application of diffractionless dielectrics as transmitting media between laser beam source and receiver is discussed. Optical properties of transmitting media are described and general system diagram is illustrated. Use of system in power transmission, communications, surgery, and machinery is explained.

B72-10435

ALIGNMENT MICROSCOPE FOR ROTATING LASER SCANNER

A. Maciel, Jr. (Singer-Gen. Precision, Inc.) and J. C. Beck (Singer-Gen. Precision, Inc.)

Dec. 1972

MSC-14118

Microscopic assembly for alignment of rotary laser focuses on small film area along scan line at oblique angle. Suitable choice of angle and location of optical components project laser beam line as X coordinate reticle. Coordination with horizontal reticle line included in microscope facilitates Y coordinate position indexing.

B72-10440

EFFICIENT WIRE-GRID DUPLEXER-POLARIZED FOR CO₂ LASERS

P. K. Cheo (Aerojet-Gen. Corp.) and C. D. Bass (Aerojet-Gen. Corp.)

Dec. 1972

GSFC-11403

Chromium wire grid duplexer-polarizer for 10 micrometer carbon dioxide laser communication system is produced by depositing photo-resist film onto silicon substrate, grating by two collimated cadmium helium laser beams, covering of surface with thin chromium layer, and subsequent stripping of uncoated portion to expose etched wires.

B72-10443

HIGH TEMPERATURE PERMEAMETER FOR MEASURING MAGNETIC PROPERTIES

J. P. Barranger

Aug. 1972 See also NASA-TN-D-6659

LEWIS-11609

Instrument for measuring magnetic permeability of materials undergoing heat treatment as method for monitoring stress relief and tempering is described. Procedure is based on magnetic potentiometer principle with yoke compensating coils to cancel effects of reluctance of yoke and joint gaps. Instrument is heated with specimen being heat treated.

B72-10460

RADIOLOGICAL CONTROL MANUAL

J. W. Noblin

Aug. 1972

M-FS-22092

Objectives of the manual are to (1) ensure compliance with requirements of AEC and governmental health agencies, (2) ensure against excessive and unnecessary exposure of personnel to harmful radiation, and (3) prevent contamination of equipment, materials, and environment with radioactive materials.

B72-10465

MAGNETS WITH STABILIZED CONDUCTORS

C. K. Jones (Westinghouse Elec. Corp.) and J. R. Gavalier (Westinghouse Elec. Corp.)

Aug. 1972

HQ-10727

Method fabricates stabilized composite conductor, for use in construction of magnets, using equal amounts of superconducting and metal materials, thus reducing weight, cost and size.

B72-10472

FREQUENCY-WAVELENGTH CALCULATOR WITH TABLE OF DIELECTRIC PROPERTIES

L. L. Thompson

Aug. 1972

GSFC-11200

Frequency-wavelength calculator has been developed which rapidly and accurately calculates wavelength of given frequency in specific dielectric material. Unit fits into shirt pocket and includes table of dielectric properties and one-step calculator.

B72-10478

WIDE-RANGE NUCLEAR MAGNETIC RESONANCE DETECTOR

J. C. Sturman and R. J. Jirberg

Aug. 1972 See also NASA-TN-D-6338

LEWIS-11513

Compact and easy to use solid state nuclear magnetic resonance detector is designed for measuring field strength to 20 teslas in cryogenically cooled magnets. Extremely low noise and high sensitivity make detector applicable to nearly all types of analytical nuclear magnetic resonance measurements and can be used in high temperature and radiation environments.

B72-10485

METASTABLE ATOM PROBE FOR MEASURING ELECTRON BEAM DENSITY PROFILES

J. M. Lockhart (Mich. Univ.) and J. C. Zorn (Mich. Univ.)

Aug. 1972

M-FS-21593

Metastable atom probe was developed for measuring current density in electron beam as function of two arbitrary coordinates, with spatial resolution better than 0.5 mm. Probe shows effects

of space charge, magnetic fields, and other factors which influence electron current density, but operates with such low beam densities that introduced perturbation is very small.

**B72-10487
A COMPTON SCATTER ATTENUATION GAMMA RAY
SPECTROMETER**

W. E. Austin (GE)

Aug. 1972

HQ-21441

Compton attenuation technique, utilizing semiconductor sum-Compton detectors, has been proposed for gamma ray spectrometer capable of gamma spectral measurements in radiation fields of 100 R/hr to one million R/hr. Spectrometer consists of two or more separate detectors, with only primary detector exposed to primary incident photon flux.

**B72-10495
INTERFEROMETRIC MEASUREMENT OF THE VELOCITY
OF RADIATING PARTICLES**

S. Aisenberg (Space Sci., Inc.)

Aug. 1972

HQ-10371

Electro-optical system for measuring very small Doppler shift displacements of spectral wavelengths emitted by atoms and ions in high velocity plasma beam is discussed. Operation of circuits is described and circuit diagram is included.

**B72-10500
FLEXIBLE SHIELDING SYSTEM FOR RADIATION PROTECTION**

A. Babin

Dec. 1972

LRL-10028

Modular construction of low cost flexible radiation shielding panels consists of water filled steels cans, zinc bromide windows, turntable unit, master-slave manipulators, and interlocking lead bricks. Easy modifications of shielding wall thicknesses are obtained by rearranging overall geometry of portable components.

**B72-10516
PARTICLE DETECTION WITH INTENSIFIED LASER BEAM**

R. G. Knollenberg (Chicago Univ.)

Aug. 1972

HQ-10645

Application of external and laser output mirrors to produce intensified light beam for measurement of light scattered by dispersed particles is described. Use of fiber optics bundles to collect light is discussed. Diagram of equipment and principles of operation are presented.

**B72-10520
ACOUSTO-OPTIC FILTER FOR ELECTRONIC LASER
TUNING**

S. E. Harris (Stanford Univ.)

Dec. 1972

HQ-10715

Electronically tunable lithium niobate filter utilizes acoustic-optic diffraction for tuning laser to desired frequencies. Filter placed inside laser cavity diffracts incident optical signal of one polarization into orthogonal polarization by collinearly propagating acoustic beam to desired wavelength.

**B72-10521
IMPROVED OPTICAL FILTERS FOR AUTOMATED VISUAL
INSPECTION**

D. A. Curtis (Little / Arthur D./ Inc.)

Aug. 1972

HQ-10720

Sides of spatial filter slits are shaped so that their contribution to signal is reduced, thus minimizing the number of scanning errors.

**B72-10524
AN ABSORPTION SPECTRUM AMPLIFIER FOR DETERMINING
GAS COMPOSITION**

E. F. Zalewski (NBS), N. C. Peterson (NBS), M. J. Kurylo (NBS), A. M. Bass (NBS), W. Brown (NBS), and R. A. Keller (NBS)

Aug. 1972

HQ-10752

Compositions of gas samples are frequently studied by laser absorption spectroscopy. Sensitivity is improved by two orders of magnitude when absorption cell is placed inside an organic-dye laser cavity.

**B72-10528
HIGH-INTENSITY SOURCE OF EXTREME ULTRAVIOLET**

E. Paresce (Calif. Univ.), S. Kumar (Calif. Univ.), and S. Bowyer (Calif. Univ.)

Aug. 1972

HQ-10754

High intensity ultraviolet radiation source was developed which is suitable for emission below 500 Å. Source, useful for 100 to 1000 Å range, is simple and inexpensive to construct, easy to operate, and very stable. Because of sufficiently intense output spectrum, source can be used with monochromator at wavelengths as low as 160 Å.

**B72-10532
TEMPERATURE CONTROL OF A CRYOGENIC BATH**

I. M. Asher (MIT)

Aug. 1972

HQ-10788

Foreign gas introduced into vapor phase above liquid region cools cryogenic baths. Equipment consists of gas tank and cover of styrofoam. Helium is considered the best choice to produce cooling, though any gas with boiling point lower than that of bath liquid may be used.

**B72-10549
HYDROPHOBIC LIQUID/GAS SEPARATOR FOR HEAT
PIPES**

B. D. Marcus (TRW Systems Group)

Sep. 1972

ARC-10656

Perforated nonwetting plug of material such as polytetrafluoroethylene is mounted in gas reservoir feed tube, preferably at end which extends into heat pipe condenser section, to prevent liquid from entering gas reservoir of passively controlled heat pipe.

**B72-10554
OVERFLOW SENSOR FOR CRYOGENIC-FLUID VESSELS**

W. M. Tener

Sep. 1972

NPO-10619

Overflow sensor for cryogenic fluid vessels has been designed by winding electrical resistance element on porous tubular coil form. Form is positioned in overflow vent of cryogenic fluid vessel where it can differentiate vapor from liquid at same temperature.

**B72-10556
HELIUM WINDOW FOR SHOCK-TUBE MONOCHROMATORS**

G. M. Thomas

Sep. 1972

NPO-11852

Technique for coupling vacuum ultraviolet monochromator to shock tube to avoid loss of high energy ultraviolet light during quantitative measurements is described. System consists of helium gas window pumping through small aperture in entrance pupil of monochromator. Diagram of equipment and principles of operation are presented.

**B72-10563
MEASUREMENT OF ELECTRON DENSITY AND TEMPERATURE
IN PLASMAS**

K. W. Billman, P. D. Rowley, L. L. Presley, and J. Stallcop

Sep. 1972

ARC-10598

Application of two laser wavelengths passing through plasma measures electron density and temperature. Function depends on determining absorption of light at two wavelengths. Nature of reaction is explained and schematic diagram of equipment is included.

03 PHYSICAL SCIENCES

B72-10567

REMOTE MEASUREMENT OF THE WATER CONTENT OF SNOWPACKS

W. I. Linlor

Sep. 1972

ARC-10651

Electronic equipment for sensing moisture content of snowpacks is described. Components of electronic test equipment are illustrated and methods of conducting tests are explained. Possibilities for airborne sensing are examined.

B72-10571

LASER MASS SPECTROMETER

K. A. Lincoln

Sep. 1972

ARC-10687

Development of time of flight mass spectrometer using laser powered vaporization source is discussed. Operation of equipment to measure thermal velocities of individual mass species is described. Illustration of test equipment installation and detailed line drawing of ion producing equipment are provided.

B72-10572

OSCILLATION OF LASER-BEAM INTENSITY AS OBSERVED WITH BEAM SPLITTERS

D. M. Kuehn

Sep. 1972

ARC-10694

Characteristics of nearly perfectly flat beam splitter for observing laser pulse shapes are discussed. Disadvantages of conventional instruments for observing properties of laser beams are described. Effects of high frequency noise on accuracy of measurement are reported.

B72-10611

A TRANSMITTING AND REFLECTING DIFFUSER FOR ULTRAVIOLET LIGHT

L. S. Keafer, Jr., E. E. Burcher, and L. P. Kopia

Jan. 1972

LANGLEY-10385

Fabrication of ultraviolet radiation diffusing layer in configuration that uses ultraviolet properties of fused silica condensate is discussed. Construction and operation of the device are described. Diagram of reflecting diffuser to show construction and method of operation is included.

B72-10629

MAGNETOMETER USES BISMUTH-SELENIDE

J. A. Woolman, I. L. Spain (Md. Univ.), and H. Beale (Calif. Univ.)

1972

LEWIS-11632

Characteristics of bismuth-selenide magnetometer are described. Advantages of bismuth-selenide magnetometer over standard magnetometers are stressed. Thermal stability of bismuth-selenide magnetometer is analyzed. Linearity of output versus magnetic field over wide range of temperatures is reported.

B72-10654

PREVENTION OF CATHODE DAMAGE FROM POSITIVE ION BOMBARDMENT

W. H. Bennett (N. C. State Univ.)

Dec. 1972

HQ-10688

Mixed alkaline earth oxide compounds deposited into hole at cathode surface center prevent ion back bombardment damage to cathode by reducing oxide layer and by creating metallic diffusion along sides of hole for enhanced electron emission.

B72-10655

A BI-STABLE OPTICAL DEVICE

A. Szoke (MIT)

Dec. 1972

HQ-10701

Device was developed which produces short optical pulses of variable lengths with high peak power and without use of external modulators or independent light beams. Optical field

intensity is built up inside cavity. At peak of its intensity, light is switched off.

B72-10662

A STUDY OF RADIATION ENVIRONMENT IN SPACE AND ITS BIOLOGICAL EFFECTS

S. B. Curtis (Boeing Co.) and M. C. Wilkinson (Boeing Co.)

Dec. 1972 See also D2-84274-1; D2-90469; NASA-CR-1037;

NASA-CR-1469

HQ-10798

Biological effects on man in space resulting from galactic and solar cosmic radiation are discussed. Importance of secondary ions which contribute to galactic cosmic radiation hazards is analyzed. Mathematical model to show rate of production of secondary ions of given atomic number at various points in absorber is presented.

B72-10665

SELF-CALIBRATING REMOTE ATMOSPHERIC ELECTRO-MAGNETIC PROBE AND DATA ACQUISITION SYSTEM

K. A. Kadrmaz

Oct. 1972

M-FS-21212

Design and development of electromagnetic probe is discussed. Probe is designed to measure wind speed, turbulence levels, and aerosol content of atmosphere. Data are used to construct real-time, three dimensional map of atmospheric composition.

B72-10670

A METHOD OF ELIMINATING HYDROGEN MASER WALL SHIFT

M. W. Levine (Smithsonian Astrophys. Obs.) and R. F. C. Vessot (Smithsonian Astrophys. Obs.)

Dec. 1972

HQ-10663

Maser output frequency shift was prevented by storage bulb kept at temperature at which wall shift is zero and effects of bulb size, shape, and surface texture are eliminated. Servo system is shown, along with bidirectional counter.

B72-10699

ACCURATE MEASUREMENT OF GAS VOLUMES BY LIQUID DISPLACEMENT

J. D. Christian

Dec. 1972

ARC-10723

Mariotte bottle as liquid displacement device was used to measure gas volumes at flow rates that are far below threshold of wet test gas meters. Study of factors affecting amount of liquid displaced by gas flow was completed, and equations were derived which relate different variables.

B72-10700

PARALLEL-PLATE VISCOMETER

H. T. Fearnehough, R. F. Fedors, R. F. Landel, and T. H. Sauer

Dec. 1972

NPO-11387

Viscometer consists of movable vertical rod with one optical flat fixed to its lower end and centered over second optical flat held rigidly parallel to moveable flat. Two perforated diaphragms of thin metal permit limited amount of vertical movement of rod carrying movable flat, but resist lateral movement.

B72-10701

THIN-FILM ULTRAVIOLET DETECTOR AND SPECTROMETER

G. W. Lewicki and J. Maserjian

Dec. 1972

NPO-11432

Typical metal-insulator-metal detector device is formed on quartz substrate. Base electrode is 3 to 6 nm aluminum layer, overcoated with 3 to 6 nm aluminum oxide or aluminum nitride, and capped with counter electrode of gold, lead, magnesium, or aluminum. Photoelectric yield data are given for Al-AIN-Au structure.

B72-10702
COMPARATIVE PERFORMANCE OF DOUBLE-FOCUS AND
QUADRUPOLE MASS SPECTROMETERS

S. K. Wilson

Dec. 1972 See also JPL-TM-33-456

NPO-11689

Light-weight flight type double focus and quadrupole mass spectrometer models were compared. Data cover size, weight, and power sensitivity required to achieve same resolution sensitivity at given mass number. Comparison was made using mathematical relationships. Analysis was confined to equal ion source area sensitivity variations not more than 40% over mass range.

B72-10703
GAS-FLOW RESTRICTOR

G. J. Bastien

Dec. 1972

NPO-10117

Gas flow restrictor is described, consisting of predetermined length and size of capillary tubing to control flow rate of carrier gas into gas chromatograph of flow rate of sample gas into mass spectrometer inlet system. Length and inner diameter of capillary tubing was estimated with mathematical expressions for viscous flow.

B72-10706
TRANSONIC DIVIDER FOR GAS CHROMATOGRAPH
EFFLUENTS

J. B. Wellman

Dec. 1972

NPO-11479

Transonic effluent divider system was developed which permits varying mass input of gas chromatographic effluent into mass spectrometer without affecting performance of gas chromatograph. Mechanisms of operation are described.

B72-10707
COMPUTATION OF LAMINAR HEAT TRANSFER FROM
GASEOUS PLASMAS IN ELECTROMAGNETIC FIELDS

T. K. Bose

Dec. 1972 See also JPL-TR-32-1447

NPO-11725

Heat transfer analysis procedure is presented for two-temperature gaseous plasma. Analysis is based on laminar flow of singly-ionized, quasineutral plasma with variable properties. Sheath analysis is described for species in accelerating field, decelerating field, emitted from wall, and recombining at wall.

B72-10720
ERASABLE HOLOGRAPHIC MEDIUM USING CIS-
TRANSISOMERIZATION

A. H. Adelman (Battelle-Columbus Lab.) and H. M. Grotta (Battelle-Columbus Lab.)

Dec. 1972

M-FS-22062

Photochemical process has been developed for recording of erasable holograms by utilizing reversible transformation of two isomers of molecule upon exposure to light. Hologram system records, reads, and erases in response to changes in refractive index of mixture of isomers.

B72-10727
TECHNIQUE FOR REFOCUSING, DECOMPRESSING, AND
CONDITIONING SPENT ELECTRON BEAMS

H. G. Kosmahl

Dec. 1972 See also NASA-CR-121026; NASA-TN-D-6093

LEWIS-11617

System to improve space communication by refocusing spent electron beams is described. System reduces transverse velocity components in beam and dilutes current densities to acceptable levels. Diagram of principles of operation is included.

B73-10009
VIDEO ENHANCEMENT OF X-RAY AND NEUTRON
RADIOGRAPHS

A. Vary

Mar. 1973

LEWIS-11944

System was devised for displaying radiographs on television screen and enhancing fine detail in picture. System uses analog-computer circuits to process television signal from low-noise television camera. Enhanced images are displayed in black and white and can be controlled to vary degree of enhancement and magnification of details in either radiographic transparencies or opaque photographs.

B73-10016
CONTINUOUS CATALYTIC DECOMPOSITION OF METH-
ANE

J. E. Clifford (Battelle-Columbus Labs.), L. J. Hillenbrand (Battelle-Columbus Labs.), B. C. Kim (Battelle-Columbus Labs.), E. S. Kolic (Battelle-Columbus Labs.), and J. Zupan (Battelle-Columbus Labs.)

Jan. 1973 See also NASA-CR-1662

ARC-10339

Water is conserved by employing sequence of reactions whereby 75% of methane from Sabatier reaction is decomposed to solid carbon and hydrogen; hydrogen is then separated from residual methane and utilized in usual Sabatier reaction to reduce remaining metabolic carbon dioxide.

B73-10017
HIGH-TEMPERATURE-RADIATION ANALYZER

R. P. Farwell (Barnes Engineering Co.)

Jan. 1973

ARC-10565

Six-channel radiometer with three ultraviolet detection channels measures temperatures at 2-millisecond intervals. One infrared channel measures total radiation, and two infrared channels measure radiation in discrete spectral intervals at rate of 40 intervals per second. Analyzer consists of optical and electrical system.

B73-10018
DETECTION OF NITRIC OXIDE POLLUTION

C. Chackerian, Jr. and M. F. Weisbach

Jan. 1973

ARC-10709

Studies of absorption spectra enhancement of certain atomic and molecular species inserter in dye-laser cavities have indicated that nitric oxide can be determined at low concentrations. Absorption coefficient of small amounts of nitric oxide in intra-laser-cavity absorption cell containing helium is enhanced by more than two orders of magnitude.

B73-10025
APPARATUS FOR MEASURING ELECTRICAL PROPERTIES
OF MATERIALS

V. Hadek

Jan. 1973

NPO-11749

Resistance of sample is measured with aid of usual electrical test instruments applied to electrical contacts provided at ram and anvil assemblies. Temperature differential is established between ram and anvil for measurement of Seebeck coefficient. Voltage generated across sample is detected at electrical contacts.

B73-10027
TWO NEW METHODS TO INCREASE THE CONTRAST OF
TRACK-ETCH NEUTRON RADIOGRAPHS

J. Morley

Mar. 1973 See also NASA-TM-X-67947

LEWIS-11893

In one method, fluorescent dye is deposited into tracks of radiograph and viewed under ultraviolet light. In second method, track-etch radiograph is placed between crossed polaroid filters, exposed to diffused light and resulting image is projected onto photographic film.

B73-10031
EXPERIMENTAL VERIFICATION OF COMPUTER SPRAY-
COMBUSTION MODELS

03 PHYSICAL SCIENCES

W. H. Nurick (Rocketdyne/N. Am. Rockwell Corp.), R. M. Clayton, and J. H. Rupe

Feb. 1973 See also NASA-CR-114479

ARC-10689

Analytical model formulation, representing performance of spray-combustion device, is based on understanding of atomization, mixing, vaporization, and combustion which occurs in device. Report lists results of correlations of computed values with values obtained from experiments with rocket combustor. Technique offers excellent method for evaluating validity and ranges of applicability of combustion models.

B73-10050

OPTICAL MONITORING SYSTEM

J. T. Nev (Gen. Dynamics Corp.), E. H. Wrench (Gen. Dynamics Corp.), M. G. Fox (Gen. Dynamics Corp.), and H. Lave (Gen. Dynamics Corp.)

Feb. 1973

M-FS-21692

Instrument can measure optical transmission, reflectance, and scattering. This information can be used to identify changes in optical properties or deviations from required optical standards. Device consists of monochromatic source, photo detector, transfer mirror, and hemiellipsoid. System might be used to measure optical properties of thin film.

B73-10058

SUSPENSION OF OBJECTS IN MAGNETIC AND ELECTRIC FIELDS

L. S. Wilk (MIT)

Mar. 1973

JSC-14170

Device has improved suspension efficiency by simulating characteristics of diamagnetic materials. Pseudodiamagnetic device suspended magnet in magnetic field at rate of 232 Kg/W. Suspension in magnetic field can be produced in two ways: magnetic source can be stationary and pseudodiamagnetic device suspended or vice versa.

B73-10075

VIBRATION MEASUREMENT BY PULSE DIFFERENTIAL HOLOGRAPHIC INTERFEROMETRY

D. A. Evensen (TRW, Inc.) and R. Aprahamian (TRW, Inc.)

Mar. 1973 See also NASA-CR-2028

LANGLEY-11092

Technique measures structural deformation of materials subjected to wide range of temperatures and other environmental conditions. Effects of convection currents are eliminated by operating a pulsed laser in double pulse mode that exposes hologram twice in quick succession.

B73-10086

HOLOGRAPHIC TESTING WITH A DOUBLE REFERENCE BEAM

F. H. Stuckenberg (Rockwell Intern. Corp.)

Mar. 1973

JSC-17959

Image of unstressed object is taken with reflected beam and one reference beam. Object is then stressed and second (double) exposure is made. Developed film plate provides double exposure hologram that can be projected by simultaneous illumination with both reference beams. Appearance of multiple images may be eliminated while manipulating fringe patterns.

B73-10095

A NEW OPTICAL RECORDING MEDIUM

H. Aronson (Isomet Corp.) and G. M. Loiacono (Isomet Corp.)

Mar. 1973

M-FS-22348

Method has been developed for doping lithium niobate crystals with transition metal to increase rate at which crystal can record optical data. Discovery may facilitate development of system for analog storage of TV frames, printed pages, photographs, and other visual information.

B73-10105

THERMAL CONTACT RESISTANCE IN A NON-IDEAL JOINT

R. T. Roca (MIT) and B. B. Mikic (MIT)

May 1973

M-FS-21775

Analysis has been conducted to determine thermal contact resistance at interface of two heat conductors and effect of roughness of mating surfaces on pressure distribution. Investigation reveals how heat transfer resistance may be decreased or increased by changing surface properties of particular interface being considered.

B73-10116

FAST-NEUTRON SPECTROMETER DEVELOPMENTS

R. B. Moler (IIT Res. Inst.), W. E. Zagotta (IIT Res. Inst.), and S. I. Baker (IIT Res. Inst.)

Jun. 1973

M-FS-22279

Li6 sandwich-type neutron spectrometer is equipped with proportional counter for particle identification. System uses current-sensitive preamplifiers to minimize pile-up of gamma-ray and particle pulses.

B73-10130

MONITOR FOR PHYSICAL PROPERTY CHANGES IN SOLID PROPELLANTS

R. E. Black, Jr. (Thiokol Chem. Corp. Elkton Div.)

Mar. 1973 See also NASA-CR-114456

ARC-10702

Specially designed sensor is attached to or imbedded in propellant. When sensor is driven into vibration, it moves with a phase lag directly proportional to internal friction or loss coefficient. Resonance frequency of the system is related to Young's modulus. Modulus or internal friction can be monitored over long period of time.

B73-10131

LIGHT-DIRECTION SENSOR BASED ON BIREFRINGENCY

A. R. Johnston

Mar. 1973

NPO-11201

Optical system consisting of polarizer, analyzer, quarterwave retarder converts incident light beam to one which has an intensity related to the extent the incident beam is off axis.

B73-10133

GAS-OPERATED ACTUATOR: A CONCEPT

P. G. Simmonds

Mar. 1973

NPO-11369

Recyclable actuator does depend on valves for its operation. Palladium cathode tube in electrochemical cell is used to generate hydrogen by electrolysis. Hydrogen pressure generated inside tube causes expansion of bellows, which raises load. Bellows can be retracted by reversing electrical connections to cell electrodes.

B73-10137

ROCKET PLUME PROPERTIES MEASURED IN SPACE SIMULATORS

J. B. Stephens and J. G. Herrera

Mar. 1973 See also B72-10243

NPO-11608

Molecular sink facility and 25-foot space simulator have been used to distinguish nature of exhaust plumes from nozzles with relatively large internal boundary layer flow. Plume density has been measured by electron beam/photomultiplier system.

B73-10140

MICROWAVE EMISSION FROM GRANULAR SILICATES

J. E. Conel

Mar. 1973 See also JPL-TM-33-458

NPO-11702

Experimental finding is that mass absorption coefficient is independent of frequency but highly dependent on moisture content; effective conductivity increases with frequency, and low tangent is independent of frequency. Computed values of electrical properties are in rough numerical agreement with extrapolated laboratory values on other silicate materials.

B73-10143
IMPROVED TECHNIQUE FOR INSPECTION OF PLANAR SURFACES BY MICROSCOPY AND INTERFEROMETRY

D. S. Doubt

Mar. 1973

NPO-11893

Incident white light and ordinary interferometer attachment provide images that differ in color according to relative heights of planar surfaces. With aid of technique, it is possible to perceive buried layers, such as diffused collectors, as well as discover defects in buried layers.

B73-10155
LASER ADDRESSED HOLOGRAPHIC MEMORY SYSTEM
 R. A. Gange (RCA), E. M. Wagle (RCA), and C. C. Steinmetz (RCA)

May 1973 See also B73-10166

M-FS-22565

Holographic recall and storage system uses red-lipid micro-crystalline wax as storage medium. When laser beam strikes wax, its energy heats point of incidence enough to pass wax through transition temperature. Holograph image can then be written or erased in softened wax.

B73-10158
A FLEXIBLE ALL-TEMPERATURE PRESSURE VESSEL
 M. L. Strangeland (Rockwell Intern. Corp.)

May 1973

M-FS-19196

By interrupting lines of stress with convolutions, structure can be designed to contain pressure, operate at cryogenic and high temperatures, and provide flexibility necessary for repetitive cycles of parallel-offset shear translation.

B73-10163
REDUCED PREPARATION TIME FOR THERMAL VACUUM CHAMBER TESTS

T. W. Tysor (Rockwell Intern. Corp.)

May 1973

M-FS-24171

Insulation system of test chamber will reach thermal equilibrium more quickly when it is gassy and least efficient than when evacuated and most efficient.

B73-10175
Q-SWITCHED, CAVITY-DUMPED, MODE-LOCKED LASER
 W. Fountain (GTE Sylvania)

Jun. 1973

GSFC-11509

Continuous-wave laser can achieve higher rate of emission through Q-switching. Technique keeps Q. energy storage rating, of laser cavity at low value while ion population inversion is being built up. Then Q is suddenly switched to high value just before instability occurs.

B73-10176
ROCKET BORNE INSTRUMENT TO MEASURE ELECTRIC FIELDS INSIDE ELECTRIFIED CLOUDS

L. H. Ruhnke (NOAA)

Jun. 1973

KSC-10730

Simple electric field measuring system is mounted on small rocket and consists of two voltage probes, one extending from nose and other on tail fin. Electric field through which rocket passes is determined by potential difference between probes.

B73-10181
ION MASKING IMPROVES RESOLUTION IN QUADRUPOLE MASS SPECTROMETERS

N. Ierokomos (Perkin-Elmer Corp.) and M. R. Ruecker (Perkin-Elmer Corp.)

Jun. 1973 See also NASA-CR-115781

GSFC-11406

Mass spectrometers analyze molecular composition by determining mass-to-charge ratio of ion fragments of molecules. Study adds significantly to quantitative understanding of

quadrupole mass filter. It includes development of quantitative theory of ion oscillations, computer analysis of ion behavior, and identification of determining factors in peak tail size.

B73-10182
DESIGN AND FABRICATION OF AN EXPERIMENTAL IMAGE FORMING LIGHT MODULATOR

R. G. Shackelford (Georgia Inst. of Tech.) and J. R. Walsh, Jr. (Georgia Inst. of Tech.)

Jun. 1973

M-FS-22547

Image forming light modulator transforms electrical signal representation of two dimensional image into optical transparency. All major assemblies are easily demounted for convenience in adapting modulator to other operating modes with different modulation-media. High-speed vacuum pump is incorporated into modulator housing to help reach required operating pressure.

B73-10192
BALLOON-BORNE PACKAGE TEMPERATURE CONTROLLER

M. Schach and J. T. Triolo

Jun. 1973

GSFC-11620

Simple, inexpensive, lightweight enclosure traps upward long wave radiation of earth while reflecting harsh solar radiation in upper atmosphere. It warms enclosed instruments in cold regions and protects them from overheating during the day. Device can be attached to balloon system without any changes in experimental design.

B73-10206
ANGULAR MAGNETIC FIELD BEAM IMPROVES EFFICIENCY IN KLYSTRONS AND TRAVELING WAVE TUBES

W. Neugebauer (GE)

Jun. 1973 See also NASA-CR-12114

LEWIS-11610

Special lens shaping allows variation of focusing strength with radius. Lens can be either converging or diverging depending on charge of particles and direction of angular magnetic field. There is potential use for lens in particle analyzers, electron beam welding systems, microwave tube refocusing systems, and possible display type devices.

B73-10209
A THEORETICAL STUDY OF AERODYNAMIC NOISE GENERATION

A. C. Peter (Rockwell Intern. Corp.)

Jun. 1973

M-FS-24167

Study focuses on physical mechanism of waves in fluid such as air. Strong interaction between energy of wave and fluid particle motion causes energy of wave to be dissipated. Dissipation depends not only on momentum, time-rate, and force, but also upon nature and magnitude of entropic-flow effects.

B73-10210
LASER SYSTEM DETECTS AIR TURBULENCE

W. K. Dahm, J. A. Dunkin, and E. A. Weaver

Jun. 1973

M-FS-21244

Laser beam is emitted from pod on side of aircraft. Some scattered light returns to aircraft, but at shifted frequency caused by Doppler effect from local air speeds. Current work focuses on extending range, including investigations of effects of particle density, focusing, back scatter efficiency, absorption, and other factors.

B73-10212
REAL TIME STATISTICAL ANALYSIS OF ACOUSTIC EMISSION SIGNALS FOR FLAW MONITORING SYSTEMS

F. E. Sugg (Rockwell Intern. Corp.) and F. J. Moskal (Rockwell Intern. Corp.)

Jun. 1973

M-FS-24402

Small structures are checked by monitoring samples for acoustical signal count. Flaws are located by observing relatively

03 PHYSICAL SCIENCES

high acoustical activity within given area. Acoustical monitoring has been extended to large structures by dividing large samples into small areas and then monitoring each area separately.

B73-10221

A HEAT FLOW CALORIMETER

W. V. Johnston (Rockwell Intern. Corp.)

Aug. 1973

GSFC-11434

Reaction mechanism for nickel-cadmium cell is not known well enough to allow calculation of heat effects. Calorimeter can measure heat absorbed or evolved in cell, by determining amount of external heat that must be supplied to calorimeter to maintain constant flow to isothermal heat sink.

B73-10242

IMPROVED PHOTOGRAPHIC PRINTS WITH A LINEAR RADIAL TRANSMISSION FILTER

L. M. Weinstein

Aug. 1973

LANGLEY-11221

Linear Radial Transmission Filter (LRTF) is easy to use and yet results in prints which depict more information contained in negative than can be shown by direct printing. LRTF is optical-quality filter which has maximum transmission in center and linear drop in transmission radially out from center.

B73-10251

ATMOSPHERIC TEMPERATURE MEASUREMENTS BY RAMAN LASER SCATTERING

W. J. Masica, J. A. Salzman, and T. A. Coney

Dec. 1973 See also NASA-TN-D-6879; NASA-TN-D-7126

LEWIS-12065

System makes continuous synoptic measurement of air temperatures and temperature profiles from the ground in real time. Development is based on principle that intensity distribution of Raman scattered laser light is a function of temperature and it is theoretically possible to measure air temperature by analyzing its Raman spectrum.

B73-10252

TOTAL-PRESSURE MEASUREMENT IN PULSATING FLOWS

L. N. Krause, T. J. Dudzinski, and R. C. Johnson

Dec. 1973 See also NASA-TM-X-68128

LEWIS-12077

Pneumatic-type probe was used as comparison instrument with total pressure tubes to determine true average pressure and, thus, to determine if nonlinear averaging effects were significant. Since pneumatic probe is more complicated to use than a total-pressure tube, it is used only as a comparison instrument to determine extent of averaging effects.

B73-10262

LASER VELOCIMETER WITH TRANSVERSE AND ON-AXIS SENSITIVITY

K. L. Orloff

Jun. 1973

ARC-10642

Laser Doppler velocimeters are used for measurement of localized fluid velocities without perturbation of flow field. Technique which utilizes only two outgoing beams polarized normally to one another can be processed in such a manner that local oscillator signal is obtained and usual dual-scatter velocity is also retrieved.

B73-10268

OPTICAL DETECTION OF OIL ON WATER

J. P. Millard and J. C. Arvesen

Jul. 1973

ARC-10649

Three radiometric techniques utilizing sunlight reflected and backscattered from water bodies have potential application for remote sensing of oil spills. Oil on water can be detected by viewing perpendicular polarization component of reflected light or difference between polarization components. Best detection is performed in ultraviolet or far-red portions of spectrum and in azimuth directions toward or opposite sun.

B73-10279

WIDE-FIELD REFLECTIVE SCANNING OPTICAL SYSTEMS

I. R. Abel (Honeywell Inc.)

Aug. 1973

JSC-14096

Catoptric optical scanning system provides relatively fast line-scan rate for two-dimensional coverage. Rapid scan rates require low focal ratios between components and smallest possible masses. System is relatively free from monochromatic defects and chromatic aberrations.

B73-10283

MEASUREMENT OF X-RAY SCATTERING BY OPTICAL SURFACES

R. S. Wriston (Martin Marietta Corp.)

Aug. 1973

GSFC-11590

Optical surfaces built for X-ray telescopes are made to reflect very short wavelengths that range in magnitude from 2 to 100 angstroms. Minor irregularities or contamination on surface of any telescope mirror can affect quality of optical image.

Apparatus checks reflection of optical surfaces; scattering of X-rays is measured with angular accuracy of one arc-second.

B73-10312

SELF-POWERED MIXER FOR PRESSURIZED CONTAINERS

Y. Y. Hsu and B. T. Ebihard

Dec. 1973

LEWIS-12054

Mechanical stirrer, installed entirely within tank, is powered by turbine driven by discharge flow of fluid. Contents of tank are automatically mixed whenever fluid in tank is discharged. Magnetic coupling eliminates need for shaft seal, particularly in high-pressure tanks.

B73-10330

HOLOGRAM RECORDING TUBES

J. H. Rajchman (RCA)

Oct. 1973

M-FS-22590; M-FS-22591

Optical memories allow extremely large numbers of bits to be stored and recalled in a matter of microseconds. Two recording tubes, similar to conventional image-converting tubes, but having a soft-glass surface on which hologram is recorded, do not degrade under repeated hologram read/write cycles.

B73-10336

A LASER HEAD FOR SIMULTANEOUS OPTICAL PUMPING OF SEVERAL DYE LASERS

P. B. Mumola and B. T. McAlexander

Oct. 1973

LANGLEY-11341

Device accomplishes simultaneous optical pumping using single flashlamp and electrical driver. Dye lasers require relatively low energy to operate (low-threshold pumping requirement) and provide simple method for producing simultaneous independent laser output at number of different wavelengths.

B73-10378

IMAGE FORMATION IN MICROWAVE HOLOGRAPHY

R. W. Cribbs (Electra-Physics Labs, Inc.) and B. L. Lamb (Electra-Physics Labs, Inc.)

Sep. 1973

ARC-10773

Microwave holograms are made without offset reference beam, but it has been found that Van der Lugt filter can be used to produce image offset. Also, filter permits 'decoding' of holograms in contrast with usual practice of reconstructing visible-light analogs of original micro-wave wave fronts.

B73-10379

MICROWAVE HOLOGRAPHY FOR NONDESTRUCTIVE TESTING

R. W. Cribbs (Electra-Physics Labs, Inc.) and B. L. Lamb (Electra-Physics Labs, Inc.)

Sep. 1973

ARC-10774

Holographic methods permit use of very large effective apertures so that weak signals can be collected over wide area and integrated to form image. Technique, modification of side-looking radar principle, can be used at very short ranges needed for nondestructive inspection of test specimens.

B73-10381**CARRIER SUPPRESSION DEVICE FOR A HETERODYNE GAS ANALYZER**

E. A. McClatchie (Andros Inc.)

Sep. 1973 See also B72-10198

ARC-10785

Analyzer operates with broadband light from blackbody infrared source. Light is passed sequentially through two gas-filled chambers to suitable infrared detector while pressures in gas-filled chambers are modulated in sinusoidal manner. Because pressure of infrared-absorbing gases in chambers is modulated, amount of light absorbed by gases is also modulated.

B73-10383**SEPARATION OF GAS FROM LIQUID IN A TWO-PHASE FLOW SYSTEM**

L. G. Hayes and D. G. Elliott

Sep. 1973

NPO-11556

Separation system causes jets which leave two-phase nozzles to impinge on each other, so that liquid from jets tends to coalesce in center of combined jet streams while gas phase is forced to outer periphery. Thus, because liquid coalescence is achieved without resort to separation with solid surfaces, cycle efficiency is improved.

B73-10399**COHERENCE-LENGTH EXTENDER**

R. L. Kurtz

Oct. 1973

M-FS-22434

Holograms of large objects may be formed by using several coherent low-intensity laser sources. If several low intensity laser sources are available, they can be applied simultaneously. Each source is then used to establish one object beam and one reference beam whose path lengths are equal, recording a small portion of the total object.

B73-10409**METHOD OF PREDICTING IONIZATION-TYPE VACUUM GAGE SENSITIVITY FOR VARIOUS GASES**

R. Holanda

Dec. 1973 See also NASA-TN-D-6815

LEWIS-12056

Sensitivity of gage for one gas can be correlated to its sensitivity for other gases by the ratio of gas ionization cross sections. Ionization cross sections which best correlate with gage sensitivities vary according to gage type and ionization cross section energy level.

B73-10417**MACH-ZEHNDER OPTICAL CONFIGURATION WITH BREWSTER WINDOW AND TWO QUARTER-WAVE PLATES**

T. R. Lawrence (Lockheed Corp.), L. K. Morrison (Lockheed Corp.), and M. C. Krause (Lockheed Corp.)

Dec. 1973

M-FS-22741

Configuration is improvement because of the following: It provides higher efficiency. It reduces or eliminates feedthrough of untranslated local oscillator, which would produce a beat signal at shifted frequency of translator. When used without translator and with low-power detector, telescope secondary mirror reflects portion of output to local oscillator.

B73-10420**ULTRASONIC CALIBRATION DEVICE**

J. S. Heyman and J. G. Miller (Wash. Univ.)

Dec. 1973

LANGLEY-11435

Device is an instrument for producing known changes in both acoustic absorption and phase velocity. Calibration signal arises from actual change of acoustic parameters, not from electrical simulation. Instrument is able to simulate changes in sensitivity enhancement achieved by use of ultrasonic resonators, which cannot be achieved using electrical calibration techniques.

B73-10421**A REAL TIME MOVING-SCENE HOLOGRAPHIC CAMERA**

R. L. Kurtz

Dec. 1973 See also B73-10434; B73-10435

M-FS-21087

Method can be useful laboratory tool for observation of rapidly moving objects such as bullets, aerodynamic bodies, and bodies undergoing collisions or interactions. Optical components of holographic system are positioned so light paths from laser source will be equal.

B73-10422**ELASTIC LIGHT-SCATTERING MODULATOR: A CONCEPT**

D. H. R. Vilkomerson (RCA) and R. S. Mezrich (RCA)

Dec. 1973

M-FS-22724

Simple structure can be used as electrically-controlled light valve, to scatter both transmitted and reflected beams. Its operation is based on physical phenomenon called frosting. Device may be of interest to manufacturers of page composers, alphanumeric displays, flat-panel displays, large-screen televisions, and optical input terminals for computers.

B73-10423**LASER-ACTUATED HOLOGRAPHIC STORAGE DEVICE**

R. A. Gange (RCA), E. M. Nagle (RCA), and C. C. Steinmetz (RCA)

Nov. 1973

M-FS-22768

Device permits automatic selection of one out of thousands of pages in holographic memory system by using laser beam. In typical operation for 2 to 3 C temperature interval, using dc power supply with no power regulation, holograms were successfully written and erased over 2- by 2-cm area, using 80-mW argon laser beam.

B73-10434**MOTION COMPENSATOR FOR HOLOGRAPHIC MOTION PICTURE CAMERA**

R. L. Kurtz

Dec. 1973 See also B73-10421; B73-10435

M-FS-22517

When reference beam strikes target it undergoes Doppler shift dependent upon target velocity. To compensate, object beam is first reflected from rotating cylinder that revolves in direction opposite to target but at same speed. When beam strikes target it is returned to original frequency and is in phase with reference beam. Alternatively this motion compensator may act on reference beam.

B73-10435**PHOTOGRAPHY OF RANDOM MOTION WITH A HOLOGRAPHIC CAMERA**

R. L. Kurtz

Dec. 1973 See also B73-10421; B73-10434

M-FS-22537

Three-dimensional system uses two additional mirrors and path compensators. It is essentially three mutually-orthogonal one-dimensional systems with common focus. Laser beam is split into four parts, three of which are object beams; and fourth is reference beam. Size of each ellipse depends on magnitude of velocity vectors.

B73-10440**FLAW DETECTION BY MECHANICAL RESONANT MEASUREMENT**

O. Buck (Rockwell Intern. Corp.), H. L. Marcus (Rockwell Intern.

03 PHYSICAL SCIENCES

Corp.), G. A. Alers (Rockwell Intern. Corp.), and R. V. Inman (Rockwell Intern. Corp.)
Feb. 1974

M-FS-19218

Testing technique is based on analysis of varying frequency scan applied to measured samples. Any changes in resonant-frequency harmonics detected in samples are used to indicate size of fault. Testing apparatus uses drive mechanism to apply vibrating force to sample. Force is applied longitudinally along axis to eliminate directionality on flexural vibrations.

B73-10441

IMPROVED DISCRIMINATION IN PHOTOGRAPHIC DENSITY CONTOURING

R. A. Godding (Technicolor Graphic Serv., Inc.)

Feb. 1974

JSC-12588

Density discrimination can be accomplished through use of special photographic contouring material which has two sensitive layers (one negative, one positive) on single support. Process will be of interest to investigators who require finer discrimination of densities of original photograph for purposes such as identification of crops and analysis of energy levels of radiating objects.

B73-10458

VERSATILE ELECTRONIC LOAD

K. R. Mussen

Mar. 1974

NPO-13202

Variable load has very fast response under wide range of simulated dynamic operating conditions, and can accept inputs up to 1000 watts. Many types of signals may be applied to load. Variable pulse generator and flip-flop produce rectangular waveform. Other signals include steady state step and single pulse.

B73-10462

MONEL-SHOT AND SCREEN REGENERATORS

C. W. Browning (Garrett Corp.)

Mar. 1974

GSFC-11593

Monel has been found to be ideal material for matrix of regenerators operating in temperature range of 325 K to 50 K. Two best shapes are as spheres or as wire mesh. For given size of regenerator, spherical shots are preferable for low-temperature operation. At high temperatures, mesh would be superior by virtue of its lower flow resistance.

B73-10468

FINE GUIDANCE FOR A SPACEBORNE TELESCOPE

S. Rosin (Kollsman Instruments Corp.) and M. Amon (Kollsman Instruments Corp.)

Mar. 1974

GSFC-11487

Two transparent plates are mounted at equal and opposite angles in secondary optical-system housing, angles being set for optimum astigmatism correction. Rotation of secondary housing assembly and translation of detector are proportional to angular position of secondary image. Combined movement of two retains image within sagittal foci of secondary system.

B73-10471

IMPROVED METHOD FOR DESIGN OF EXPANSION-CHAMBER MUFFLERS WITH APPLICATION TO OPERATIONAL HELICOPTER

T. L. Parrott

Mar. 1974

LANGLEY-11548

Field test of muffler designed with aid of this method was conducted on helicopter with known exhaust-noise problem. When exhaust noises were compared for hover-flight conditions, muffler system was found to reduce exhaust noise by approximately 11 db. No significant degradation in engine performance was observed.

B73-10482

ANALYSES OF UNSTEADY ENTROPIC-FLOW PROCESSES

A. C. Peter (Rockwell Intern. Corp.)

Mar. 1974

M-FS-24475

One important aspect in these analyses is the derivation of physical mechanism of converted entropic perturbations, which is also directly related to mixing of fluids. In development of frictional fluid motion, entropy gradients of moving fluid particles perpetually increase. This growth is due to fluid particles which have been heated by frictional flow effects and are constantly lagging behind colder fluid.

B73-10488

PROCESS FOR THE PRODUCTION OF STAR-TRACKING RETICLES

A. R. Toft and W. O. Smith

Mar. 1974

GSFC-11188

Reticles designed with quartz bases are masked with desired pattern and then are coated with highly adherent layers of chromium, chromium silver alloy, silver, copper, and black chromium (mixture of chromium and chromium oxides). Black chromium final layer produces required nonreflective surface.

B73-10490

POROUS SURFACE MICROPHONE FOR MEASURING ACOUSTIC SIGNALS IN TURBULENT WINDSTREAMS

D. U. Noiseux (Bolt Beranek and Newman, Inc.)

Dec. 1973 See also NASA-CR-114593

ARC-10776

Microphone sensor transforms pressure variations caused by acoustic signals and turbulence into electrical output. Microphone is protected from direct thrust of slipstream by porous barrier. Airfoil is designed to create no turbulence in air flow over porous surface.

B73-10493

METAL TUBE USED AS SOLAR ENGINE

J. R. Jedlicka, L. R. Guist, and R. M. Beam

Dec. 1973

ARC-10461

Ends of metal tube are fastened to axles which are supported on bearings so tube can rotate about its long axis while subjected to invariant bending moment that stresses it along longitudinal axis of rotation. Heat absorbed leads to expansion of metal, which unbalances internal forces and generates rotational moment in tube.

B73-10501

HIGH-SPEED SPECTROGRAPH FOR SHOCK TUBE STUDIES

W. J. Borucki

Dec. 1973

ARC-10772

Instrument provides information on spatial distribution of electron density of gas flow in high-performance shock tube. System permits measurement of profiles of hydrogen-alpha and -beta lines with enough spectral range to record spectral features from the near ultraviolet to the long-wavelength cutoff of photographic film.

B73-10516

FABRICATION OF OPTICAL REFLECTING DIFFRACTION GRATINGS BY LIGHT-INTERFERENCE PHENOMENON

A. J. Caruso and J. Zaniewski

Mar. 1974

GSFC-11860

Features of technique: major reduction in cost of fabrication; gratings exhibit low stray or scattered radiation, improve signal noise ratio, and eliminate false spectral-lines; gratings can be fabricated free of optical aberrations, with high groove frequencies, and on practically any surface geometry; and fabrication time has been reduced.

B73-10517

STABILIZING A GASEOUS OPTICAL LASER

A. Jauan (MIT) and K. Shimoda (MIT)

Mar. 1974

XGS-03644

Frequency of gaseous optical laser can be stabilized by sinusoidally modulating the geometry of the cavity. Fabry-Perot dielectric mirrors are mounted in two Invar blocks that are connected by four magnetostrictive bars. Each bar has three coils to sinusoidally modulate system. Ac establishes frequency, and dc the average value; both are supplied to coil from control system.

B74-10012

ZEROS OF CERTAIN CROSS PRODUCTS OF BESSEL FUNCTIONS OF FRACTIONAL ORDER

W. A. Rostafinski

Apr. 1974 See also NASA-TM-X-2698

LEWIS-12221

Interpolation between values given in table of zeros is permitted provided curve is traced between at least three values from table. Zeros have been obtained on digital computer and results were rounded off to the fourth decimal point.

B74-10019

DIRECTORY OF AEROSPACE SAFETY SPECIALIZED INFORMATION SOURCES

E. A. Fullerton (Systems Develop. Corp.), L. S. Rubens (Systems Develop. Corp.), G. Mandel, and P. J. McKenna

Jun. 1974 See also NASA-CR-121206

LEWIS-12223

Directory aids safety specialists in locating information sources and individual experts in engineering-related fields. Lists 170 organizations and approximately 300 individuals who can provide safety-related technical information in form of documentation, data, and consulting expertise. Information on hazard and failure cause identification, accident analysis, and materials characteristics are covered.

B74-10022

RADIOISOTOPE THERMAL GENERATOR (RTG) POWER CONDITIONER

W. S. Stacey (Martin Marietta Corp.)

Apr. 1974

LANGLEY-11313

New regulator: (a) permits operation with high-impedance radioisotope thermal generators at conversion efficiencies typically above 90%; (b) does not require input filtering; (c) eliminates current spiking; and (d) is simple, efficient, and reliable. Converter-charger pair could be adapted for other power levels by changing transistor, diode, capacitor bank, and inductor.

B74-10038

DUALLY-MODE-LOCKED ND: YAG LASER

J. Osmundson, E. Rowe, and D. Santarpia

Jul. 1974

GSFC-11746

Mode-locking is stabilized effectively by conventional loss-modulator and phase-modulator, mode-locking elements placed in laser cavity in optical series with one another. Resulting dually-mode-locked system provides pulses with constant phase relative to mode-lock drive signal without presence of relaxation oscillation noise.

B74-10042

RECORDER/PROCESSOR APPARATUS

I. H. Shim (Image Inform. Inc.) and J. J. Stelben (Image Inform. Inc.)

Jul. 1974

GSFC-11553

Laser beam is intensity modulated in response to incoming video signals. Latent image is recorded on rotating drum which generates raster in conjunction with incrementally-driven lens carriage. Image is fed automatically to thermal processor; actual image is developed by controlled application of heat onto medium containing latent image.

B74-10051

RADIOISOTOPE HEATER

T. H. Smith, III (TRW Systems Group, TRW, Inc.), D. B. Evans (TRW Systems Group, TRW, Inc.), and A. J. Steinberger (TRW Systems Group, TRW, Inc.)

May 1974

ARC-10791

One-watt heater unit is about size of flashlight cell and can be safely handled for several minutes without danger. Unit is completely sealed and can withstand buildup of helium pressure from isotope disintegration for up to 30 years. Number of units can be safely grouped together.

B74-10054

EXTENDIBLE PROBE FOR ATMOSPHERE SAMPLING

W. J. Jones (McDonnell-Douglas Corp.), G. D. Mitchell (McDonnell-Douglas Corp.), and G. M. Jones (McDonnell-Douglas Corp.)

May 1974

ARC-10829

Sampling probe is extended through small plug in heat shield by loaded bellows to sample planetary atmosphere for compositional analysis and total pressure during entry of space probe. Assembly prevents contamination of sample by gases from pyrotechnic device and serves as sealed plenum for atmospheric pressure sensor.

B74-10055

TOROIDAL EQUIPMENT PACKAGING

W. J. Jones (McDonnell-Douglas Corp.) and J. W. Sherwood (McDonnell-Douglas Corp.)

May 1974

ARC-10828

For optimal packaging of equipment in shallow-cone vehicle toroidal packaging sets center of gravity of equipment forward. Packages are supported on rings within probe structure to provide low center of gravity. System permits interchanging of units for balance control, so minimum of lateral ballast is required.

B74-10056

BATTERY ACTIVATION SYSTEM

C. Sollo (McDonnell-Douglas Corp.), D. L. Smith (McDonnell-Douglas Corp.), and V. P. King (McDonnell-Douglas Corp.)

May 1974

ARC-10832

Initiator is fired to set off gas generator; gas flows into manifold and as gas pressure increases, chlorotrifluoroethylene diaphragms transfer force to polyethylene bags filled with electrolyte. Small membrane at base of each bag is ruptured, allowing electrolyte to flow into cells.

B74-10060

MEASUREMENT OF TEMPERATURE PROFILES IN HOT GASES AND FLAMES

R. S. Simmons (Univ. of Mich.), H. Y. Yamada (Univ. of Mich.), G. H. Lindquist (Univ. of Mich.), and C. B. Arnold (Univ. of Mich.)

Jul. 1974 See also NASA-CR-120894; NASA-CR-72491

LEWIS-12055

Computer program was written for calculation of molecular radiative transfer from hot gases. Shape of temperature profile was approximated in terms of simple geometric forms so profile could be characterized in terms of few parameters. Parameters were adjusted in calculations using appropriate radiative-transfer expression until best fit was obtained with observed spectra.

B74-10063

LONG LIFE NEUTRON GENERATOR TARGET USING DEUTERIUM PASS-THROUGH STRUCTURE

D. L. Alger

Jul. 1974

LEWIS-11866

Target structure permits all deuterons, except the one-in-a-million that interacts with tritium atom to produce a neutron, to pass completely through target structure and be returned to vacuum system. Since tritium atoms are not displaced as in conventional targets, tritium population will remain unchanged while under deuteron bombardment.

03 PHYSICAL SCIENCES

B74-10065

METHOD OF MEASURING THE THICKNESS OF RADIOACTIVE THIN FILMS

D. L. Alger, R. Steinberg, and M. D. Makinen
Jul. 1974 See also NASA-TM-X-68170

LEWIS-11971

Thickness monitor consists of proportional X-ray counter coupled to pulse counting system, copper filter over face of counter, rotatable collimator containing radioactive source, and rotatable shutter. Monitor can be used as integral part of neutron generator. It has been used to measure titanium tritide film thicknesses from 0.1 to 30 micrometers.

B74-10066

A HIGH YIELD NEUTRON TARGET

D. L. Alger, R. Steinberg, and P. Weisenbach
Aug. 1974 See also B74-10065; NASA-TM-X-68179

LEWIS-12058

Target, in cylinder form, rotates rapidly in front of beam. Titanium tritide film is much thicker than range of accelerated deuteron. Sputtering electrode permits full use of thick film. Stream of high-velocity coolant provides efficient transfer of heat from target.

B74-10071

MODULATED HYDROGEN-ION FLAME DETECTOR: A CONCEPT

J. Dimeff
Jun. 1974

ARC-10322

To improve sensitivity of flame ionization detectors chop flow of sample into flame so resulting ionization will be modulated and therefore readily amplified independently of steady-state background ionization, thermoelectric effects, contact potentials, etc. Detector should discriminate sharply between desired signal and undesired signals.

B74-10072

PROBE FOR MEASURING TURBULENT REAL-TIME SHEAR-STRESS WAVES

D. Y. Cheng
Jun. 1974

ARC-10755

To measure spectrum, magnitude, and time-average value of turbulent shear stress in flow of gas use small, hollow sphere suspended in flow to measure drag fluctuations in two 90 deg-directions as function of time.

B74-10081

COBALT BASE SUPERALLOY HAS OUTSTANDING PROPERTIES UP TO 1478 K (2200 F)

R. A. Harlow (Philco-Ford Corp.), F. H. Harf, and J. C. Freche
Aug. 1974 See also NASA-CR-121189; NASA-CR-72726

LEWIS-12089

Alloy VM-103 is especially promising for use in applications requiring short time exposure to very high temperatures. Its properties over broad range of temperatures are superior to those of comparable commercial wrought cobalt-base superalloys, L-605 and HS-188.

B74-10094

VIEWGRAPH PREPARATION MADE EASIER

H. W. Broskie, E. E. Burcher, F. K. Gough, Jr., S. J. Katzberg, and H. B. Pate, Jr.
Aug. 1974

LANGLEY-11612

Rolls of color-reversal film permit exposure of over 200 viewgraphs on one film loading. Time is saved in film development as roll film lends itself readily to automatic processing.

B74-10101

SHORT-RANGE LASER OBSTACLE DETECTOR

W. L. Kuriger
Aug. 1974

NPO-11856

Detector, designed for slow-moving vehicle to explore surface of Mars, will automatically divert vehicle from obstacles as small

as 0.5 m in its path. Detector comprises injection laser operating in pulse time-delay measurement, or radar, mode. It is capable of scanning area extending from few meters to approximately 30 m.

B74-10102

LASER-SCANNING TECHNIQUES FOR RAPID BALLISTICS IDENTIFICATION

R. C. Woodbury and R. B. Nakich (Time Zero Corp.)
Aug. 1974

NPO-11861

Two different laser-scanning methods may be utilized. In each case scanned cylindrical bullet surface is displayed "unwrapped" on oscilloscope screen. Bullets are compared by photographing each display and superimposing negatives of two images. With some modifications bullets can be scanned and compared by superimposing images on screen of dual-beam oscilloscope.

B74-10108

IMPROVED DISPENSING TARGETS FOR ION BEAM PARTICLE GENERATORS

C. G. Miller
Aug. 1974

NPO-13112

Beam impinges on palladium-silver tube, which is target, and heats impinged surface causing local hot spot. Contained gas diffuses through hot spot to meet incoming beam and produce desired particles. When beam is turned off, target spot cools and stops dispensing contained gas.

B74-10116

ANALYSIS OF ORBITAL HEAT TRANSFER

T. Buna (Martin Marietta Corp.)
Aug. 1974

ARC-10844

Graphical representation of orbital heat balance in form of polar diagrams is obtained from integral expressions of orbital heat transfer whereby quantities of heat are represented as areas swept by "thermal radii."

B74-10117

VALVE DEGRADATION DETECTOR

N. H. Doshi (TRW Systems Group, TRW, Inc.)
Aug. 1974

ARC-10850

To determine corrosive degradation of valve while it is in service, detect changes in surface roughness or presence of corrosive layers at junction of poppet and seat by measuring temperature gradients created across junction by small heat source.

B74-10118

SURFACE ROUGHNESS MEASURED BY OPTICAL SIGNATURES

R. J. Salvinski (TRW Systems Group, TRW, Inc.) and T. V. Roszhart (TRW Systems Group, TRW, Inc.)
Aug. 1974

ARC-10853

To measure roughness of metal surfaces by nondestructive means direct laser beam at surface and record distribution pattern of intensity of reflected light to obtain optical signature for comparison with calibrated surface. Signature of machined surface with scratch compared to that of regularly-patterned machined surface may also detect imperfections.

B74-10134

WAVELENGTH-SELECTIVE, SEQUENTIAL Q-SWITCHING LASER CAVITY

F. Allario and R. A. Lucht
Sep. 1974

LANGLEY-11045

Single-frequency continuous output of laser is converted into series of high-power laser pulses at high repetition rates. Applications include pollutant detection by absorption, laser gain measurements at discrete wavelengths, laser propagation measurement, and laser plasma diagnostics.

B74-10136**GRAPHITE IONIZATION VACUUM GAUGE**

G. A. Beitel (Midwest Res. Inst.) and D. K. Benson (Midwest Res. Inst.)

Sep. 1974 See also NASA-CR-2101

LANGLEY-11338

Triode gauge with electron source, electron collector, and positive ion collector made from either graphite or carbon material extends low-pressure ranges of existing gauges by changing only materials used in construction. Advantages of graphite gauge stem from physical properties of graphite (or carbon).

B74-10139**OPTICAL DISCRIMINATOR SYSTEM**

D. B. Robelen

Sep. 1974

LANGLEY-11580

System includes lightweight, inexpensive movie camera to record simultaneously views from three different angles on same filmstrip. This is noncritical system as it is adaptable to many applications requiring similar, but diverse, viewing areas.

B74-10143**RADIO-CONTROLLED, SOUND-OPERATED SWITCH**

T. D. Bryant and D. W. Solomon, Jr.

Sep. 1974

LANGLEY-11641

Switch presently provides remote control switching, by radio signals, or pollution sampling devices. Can be used for remote weather station interrogation, firing of pyrotechnics, control of dangerous equipment, or control of device in location where it is impractical to run metallic conductors because of time limitations, distance, or terrain.

B74-10149**REMOTE SUNFALL MONITOR: A CONCEPT**

R. B. Lollar (IBM) and R. R. Mandt (IBM)

Sep. 1974

M-FS-22943

Monitor is proposed as spectral monitor system designed to record digital data simultaneously from two types of sensors, mounted on both stationary assembly and tracking assembly. Both direct and total values of solar radiation are recorded. System may measure solar energy collector efficiencies for three main conversion technologies.

B74-10152**AUTOMATIC MARKER FOR PHOTOGRAPHIC FILM**

N. M. Gabbard and W. M. Surrency

Sep. 1974

MSC-14705

Commercially-produced wire-marking machine is modified to title or mark film rolls automatically. Machine is used with film drive mechanism which is powered with variable-speed, 28-volt dc motor. Up to 40 frames per minute can be marked, reducing time and cost of process.

B74-10161**ELECTROSTATICALLY CONTROLLED HEAT SHUTTER**

L. J. Derr

Sep. 1974

NPO-11942

Electrically controlled chamber filled with inert gas efficiently removes heat from heat-generating components. System can be reversed to bring heat from external source to component.

B74-10166**LASER-ACTUATED MECHANICAL DEVICE**

A. J. Murphy and L. C. Yang

Sep. 1974

NPO-13105

Actuator is portable and can be used in high-temperature (over 500 C) environments by incorporating tungsten metal film and quartz window. Actuator can be triggered when it is not directly in laser beam path by utilizing fiber optics. It is advantageous for remotely switching ultra-high voltage systems.

B74-10167**IMPROVED CONTROL FOR NUCLEAR/THERMIONIC POWER SOURCE: A CONCEPT**

C. D. Sawyer

Sep. 1974

NPO-13114

Variable-gain power regulator is used to maintain constant load voltage. There are two feedback loops. One is tied directly with regulator to feed error voltage, which is sum of reference and load voltages. Second loop is tied with reactor, where output current of thermionic fuel elements is fed back to signal generator.

B74-10168**METHOD FOR REMOTELY SENSING TURBULENCE OF PLANETARY ATMOSPHERES**

R. T. Woo and A. Ishimaru

Sep. 1974

NPO-13154

Based on variances of log-amplitude and phase fluctuations of radio occultation data received from orbital and fly-by missions, structure constant for Venusian planetary atmosphere has been estimated with high-confidence factor. Analysis indicates that effects of inhomogeneity, finite size, and superrefractivity of atmospheric turbulence cannot be ignored.

B74-10173**THROTTLEABLE HEAT PIPE**

B. D. Marcus (TRW Systems Group, TRW, Inc.)

Sep. 1974

ARC-10848

Variable thermal conductance is provided by throttling or interrupting vapor flow between evaporator and condenser sections of heat pipe. Potential advantage of throttling technique is that no bulky gas reservoirs are required. Entire condenser is maintained at nearly uniform temperature so there is better thermal interface with surrounding equipment.

B74-10181**SPECTROMETER**

D. H. Menzel (Geophysics Corp. of Am.)

Nov. 1974

GSFC-11694

Ultraviolet spectrometer measures pure monochromatic wavelengths in predetermined narrow wave bands. Two stages are incorporated: stationary dispersed beam is intercepted by array of slits cut into plate at discrete wavelength locations; second stage is inverted spectrometer which recombines dispersed spectrum at single exit slit.

B74-10182**DYNAMIC POLARIZATION COMPENSATING SYSTEM FOR OPTICAL COMMUNICATIONS RECEIVER**

M. W. Fitzmaurice and J. B. Abshire

Nov. 1974

GSFC-11782

Electro-optic cell is located in optical path of input light beam. Cell includes crystal for controlling phase between two polarization states. Cell axes are rotated 45 deg to receiver axes defined by vertical and horizontal polarization states. Voltage across cell compensates for bias by introducing different phase retardation along crystal axes.

B74-10184**CALORIMETRIC DETECTION OF NEUTRAL-ATOM CONTENT OF ION BEAM**

A. S. Roberts, Jr. (Old Dominion Univ.)

Nov. 1974

LANGLEY-11505

Energy deposition technique deduces neutral-beam flux or dose from measured values of incremental resistance increases in platinum wire passed through beam. Steady-state heat balance analysis led to equivalent neutral-beam current. Method was used to detect neutral-atom content of 60-keV argon ion beam.

B74-10187**FLIGHT TESTS OF VORTEX-ATTENUATING SPLINES**

J. C. Patterson, Jr.

Nov. 1974

03 PHYSICAL SCIENCES

LANGLEY-11645

Visual data on formation and motion of lift-induced wingtip vortex were obtained by stationary, airflow visualization method. Visual data indicated that vortex cannot be eliminated by merely reshaping wingtip. Configuration change will likely have only small effect on far-field flow.

B74-10194

LASER SYSTEM TO DETONATE EXPLOSIVE DEVICES

V. J. Menichelli and L. C. Yang

Nov. 1974

NPO-11743

Detonating system is not affected by electromagnetic interference. System includes laser source, Q-switch, and optical fiber connected to explosive device. Fiber can be branched out and connected to several devices for simultaneous detonation.

B74-10195

IMPROVED XENON LAMP FOR SOLAR SIMULATORS: A CONCEPT

L. F. Schmidt

Nov. 1974

NPO-13128

Short-arc xenon lamp proposes to produce more uniform solar output. With this lamp, both axes of sensors can be tested with same setup. Lamp includes cathode with conical tip and annular anode. Annulus is supported by angled projection to avoid interference with passage of light generated by arc.

B74-10200

DIGITAL MULTICHANNEL PHOTOMETER

E. A. Beaver (Univ. of Ca.) and C. E. McIlwain (Univ. of Ca.)

Nov. 1974

HQ-10791

System was developed for use in astronomy and other research areas concerned with detection of faint-light images. Photometer system is comparable in performance to good photomultiplier tube array except that digital electronics are used instead of analog.

B74-10202

IGNITION OF SOUNDING ROCKET MOTORS WITH HAND-PUMPED AIR

E. L. Rakowsky (Singer Co.) and V. P. Marchese (Singer Co.)

Nov. 1974 See also NASA-CR-2418

LANGLEY-11152

Method demonstrates inexpensive, safe, and foolproof concept for solid propellant rocket motors, using simple handpump to deliver air. Fluoric ignition was accomplished using system without stored energy and with complete absence of electrical energy and wiring.

B74-10211

FLUID DYNAMICS TEST METHOD

W. H. Gayman

Nov. 1974

NPO-11895

Test method and apparatus determine fluid effective mass and damping in frequency range where effective mass may be considered as total mass less sum of slosh masses. Apparatus is designed so test tank and its mounting yoke are supported from structural test wall by series of flexures.

B74-10212

ULTRASONIC SCANNER FOR FOOTPRINT IDENTIFICATION

L. J. Derr

Nov. 1974

NPO-13055

Scanner includes transducer, acoustical drive, acoustical receiver, X and Y position indicators, and cathode-ray tube. Transducer sends ultrasonic pulses into shoe sole or shoeprint. Reflected signals are picked up by acoustic receiver and fed to cathode-ray tube. Resulting display intensity is directly proportional to reflected signal magnitude.

B74-10216

HEAT PIPE WITH HOT GAS RESERVOIR

B. D. Marcus (TRW Systems Group, TRW, Inc.)

Nov. 1974 See also NASA-CR-114530

ARC-10847

Heat pipe can reverse itself with gas reservoir acting as evaporator, leading to rapid recovery from liquid in reservoir. Single layer of fine-mesh screen is included inside reservoir to assure uniform liquid distribution over hottest parts of internal surface until liquid is completely removed.

B74-10217

SYSTEM FOR MEASURING TRANSIENTS IN FLUID FLOW

D. J. Pearson (TRW Systems Group, TRW Inc.)

Nov. 1974

ARC-10852

When test valve is actuated, piston is moved by pressurized fluid, and displacement is monitored by electro-optical tracking system and recorded by oscilloscope camera. Electro-optical monitor produces output voltage proportional to displacement of piston.

B74-10223

FIELD-SEQUENTIAL STEREO TELEVISION

W. E. Perry

Nov. 1974

MSC-12616

System includes viewing devices that provide low interference to normal vision. It provides stereo display observable from broader area. Left and right video cameras are focused on object. Output signals from cameras are time provided by each camera. Multiplexed signal, fed to standard television monitor, displays left and right images of object.

B74-10224

INSPECTION OF TRANSPARENT SURFACES USING PHOTOSENSITIVE PAPER

F. R. Minton and U. O. Graham

Nov. 1974

MSC-19442

Window surface is laid flat on top of photosensitive paper. Opposite side of glass is covered by black cloth. Window edges are then illuminated by light flash through fiber optics. Exposed paper is processed and inspected. Paper shows scratches, bubbles, dust particles, and fingerprints on glass surface.

B74-10229

COAXIAL ANODE IMPROVES SENSITIVITY OF GAS RADIATION COUNTERS

W. L. Kraushaar (Univ. of Wisc.)

Dec. 1974 See also B73-10282

GSFC-11492

Anode wire itself is enclosed by three segments. Two on ends are rejector segments, and middle one is primary charge-detecting segment. Anode wire is made from tungsten and is surrounded by enamel insulation. Enamel is covered by segments of vapor-deposited gold. At one point in center segment, gold layer makes direct contact with anode wire.

B74-10230

PARTICLE IMPACT LOCATION DETECTOR

S. O. Auer

Dec. 1974 See also B73-10282

GSFC-11829

Detector includes delay lines connected to each detector surface strip. When several particles strike different strips simultaneously, pulses generated by each strip are time delayed by certain intervals. Delay time for each strip is known. By observing time delay in pulse, it is possible to locate strip that is struck by particle.

B74-10232

COMPACT SOURCE OF SOFT X-RAYS

P. Gorenstein (Am. Sci. and Eng., Inc.) and B. Harris (Am. Sci. and Eng., Inc.)

Dec. 1974

HQ-10732

Sources of soft X-rays uses alpha particles to fluoresce light elements such as boron, carbon, and magnesium. X-ray wavelengths are varied by changing target. Technique supplies broad range of monoenergetic X-rays whose energy can be adjusted very easily.

B74-10243
IMPROVED NONDISPERSIVE INFRARED ANALYZER

J. Dimeff
Dec. 1974 See also B72-10198

ARC-10802

Light from radiant energy source passes through filter, sample, and reference gas chambers to detector. Chamber with amount of gas to be measured is sealed. Filter may be gelatinous, interference, dispersive, or negative-gas, as required.

B74-10246
COMBINED EFFECTS OF A CONVERGING BEAM OF LIGHT AND MIRROR MISALIGNMENT IN MICHELSON INTERFEROMETRY

L. W. Kunz and D. Goorvitch
Dec. 1974

ARC-10889

Expressions have been derived and calculations have been made which show that combined effects lead to asymmetric interferograms and reduction in power at zero path difference. Criteria are given for estimating maximum allowable mirror misalignment.

B74-10254
IMPROVED MAGNETIC SUSPENSION TECHNIQUE

P. A. Studer
Jan. 1975

GSFC-11079

Technique combines electromagnetic coil with polarized permanent magnets. This reduces power consumption of electromagnetic units and improves response of magnetic suspension systems, by increasing their sensitivity to changes in current controlling electromagnet.

B74-10261
NOISE SUPPRESSOR

W. E. Zorumski
Jan. 1975 See also NASA-TR-R-419

LANGLEY-11141

Suppressor reduces noise propagated through ducts. It provides high attenuation in given duct length. Entire device forms acoustic trap which utilizes reflective elements on ends to direct sound energy into sound-dissipating element in center. Device achieves large suppression by utilizing interactive effects of different suppression devices.

B74-10271
VOLUME MEASURING SYSTEM

J. S. Oele (Lockheed Missiles and Space Co.)
Jan. 1975

MSC-13972

Chamber is designed to be airtight; it includes face mask for person to breathe outside air so that he does not disturb chamber environment. Chamber includes piston to vary air volume inside. Also included are two microphone transducers which record pressure information inside chamber.

B74-10275
IMPROVED CHANNEL MULTIPLIER FOR RADIATION-AND-PARTICLE DETECTORS

K. C. Schmidt (Bendix Corp.)
Jan. 1975

NPO-12128

Multiplier is formed of glass and includes cylindrically-shaped main channel element having length-to-diameter ratio of 50 to 1. Element has open slot along its length. Attached to slot edges are two glass plates set at an angle to each other. Inside surfaces are coated with secondary electron emissive coating.

B74-10291
FLAT DEVICE FOR HEAT CONCENTRATION OR DISPERSION

R. V. Jenkins and A. P. Sabol
Feb. 1975

LANGLEY-11699

Device provides low-cost unit for efficiently transferring heat between, either to or from, flat surface and central point or region. It is based upon vapor heat transfer principle and therefore, extends applicability of heat pipe.

B74-10293
ACOUSTIC-OPTIC DEFLECTOR TELESCOPE

W. C. Stewart (RCA)
Feb. 1975

M-FS-23107

In construction of page-organized holographic memories, it is necessary to provide collimated laser beam which can be deflected parallel to itself. This is used for selecting stored holograms from two-dimensional array. Three-lens system significantly reduces optical path length.

B74-10301
THERMOELASTIC ANALYSIS OF SOLAR CELL ARRAYS AND THEIR MATERIAL PROPERTIES

M. A. Salama, W. J. Rowe, and R. K. Yasui
Feb. 1975 See also NASA-CR-135713

NPO-13458

Announced report discusses experimental test program in which five different solar cell array designs were evaluated by subjecting them to 60 thermal cycles from minus 190 deg to 0.0 deg. Results indicate that solder-coated cells combined with Kovar n-interconnectors and p-interconnectors are more durable under thermal loading than other configurations.

B75-10001
A SUPERIOR PROCESS FOR FORMING TITANIUM HYDROGEN ISOTOPIC FILMS

R. Steinberg, D. L. Alger, and D. W. Cooper
Mar. 1975

LEWIS-12083

Process forms stoichiometric, continuous, strongly bonded titanium hydrogen isotopic films. Films have thermal and electrical conductivities approximately the same as bulk pure titanium, ten times greater than those of usual thin films.

B75-10004
PROPERTIES OF AIR AND COMBUSTION PRODUCTS OF FUEL WITH AIR

D. J. Pofert and R. Svehla
Mar. 1975 See also NASA-TN-D-5452; NASA-TN-D-7488

LEWIS-12402

Thermodynamic and transport properties have been calculated for air, the combustion products of natural gas and air, and combustion products of ASTM-A-1 jet fuel and air. Properties calculated include: ratio of specific heats, molecular weight, viscosity, specific heat, thermal conductivity, Prandtl number, and enthalpy.

B75-10008
UNIFORM HIGH IRRADIANCE SOURCE

A. R. Lunde (Boeing Co.), A. Fortini, and D. R. Buchele
Apr. 1975 See also NASA-CR-134523; NASA-SP-298

LEWIS-12360

New 50 Kw xenon short arc lamp mounted within elliptical collector provides irradiance levels up to 4.4×10 to the 7th power watts/sq m with non-uniformity ratio of 3.30. Energy mixer or light pipe between lamp source and target improves non-uniformity to required ratio.

B75-10017
A METHOD FOR MEASURING COOLING AIR FLOW IN BASE COOLANT PASSAGES OF ROTATING TURBINE BLADES

C. H. Liebert and F. G. Pollack
Apr. 1975 See also NASA-TN-D-7697

LEWIS-12433

03 PHYSICAL SCIENCES

Method accurately determines actual coolant mass flow rate in cooling passages of rotating turbine blades. Total and static pressures are measured in blade base coolant passages. Mass flow rates are calculated from these measurements of pressure, measured temperature and known area.

B75-10024

ELECTRICAL GAS HEATER WITH LARGE FLOW RANGE CAPABILITY

B. A. Benson (Boeing Co.) and A. Fortini
May 1975 See also NASA-CR-134523

LEWIS-12361

Auxiliary heat transfer device in form of tightly-wound helical tube was incorporated into conventional heater design to provide hydrogen heater with turn-down ratio greater than 100. Device greatly increases low flow rate capacity of heater by providing maximum heat-transfer area for low mass flows.

B75-10026

REMOTE ESTIMATION OF SOIL MOISTURE

M. B. Blanchard, R. Greeley (Santa Clara Univ.), and R. Goettelman (LFE Inc.)

Feb. 1975 See also NASA-TM-X-62343

ARC-10867

Two methods under consideration for making remote estimates of soil moisture involve measurements made in electromagnetic spectral region of 0.4 to 14.0 micrometers: (1) spectral reflectance, (2) soil temperature.

B75-10028

STUDY OF FLUID FLOW BY CHARGED PARTICLES

M. Deluca (Ohio State Univ.) and H. R. Velkoff (USAAMRDL)
Feb. 1975

ARC-10925

Analytical and experimental effort explores possibility of using charged particles as diagnostic tool in study of fluid flows. Test program involved right circular cylinder and airfoil located in large wind tunnel; ions were injected into flow and resulting currents at surfaces were monitored.

B75-10034

COAXIAL, SELF-ALIGNING OPTICAL SCANNING SYSTEM

D. B. Rhodes

May 1975

LANGLEY-11711

System provides fast way to sequentially focus optical energy (light) at preselected points in space. It transmits optical energy to point in space while at same time receiving any optical energy generated at that point and then moves on to next selected point and repeats this transmit-and-receive operation.

B75-10035

TRANSMISSION OSCILLATOR ULTRASONIC SPECTROMETER (TOUS): A NEW RESEARCH INSTRUMENT

J. S. Heyman, F. D. Stone, M. S. Conradi (Washington Univ.), and J. G. Miller (Washington Univ.)

Apr. 1975

LANGLEY-11735

TOUS is capable for measuring very small changes in acoustic attenuation and phase velocity. Its high sensitivity to small changes in ultrasonic absorption results in part from operation under marginal conditions. In spite of high sensitivity, TOUS system is relatively simple, inexpensive, and compact.

B75-10040

VIEWFINDER/TRACKING SYSTEM FOR SKYLAB

W. L. Casey (Martin Marietta Corp.)

Apr. 1975 See also NASA-CR-133967; NASA-TM-X-69040

MSC-14407

Basic component of system is infrared spectrometer designed for manual target acquisition, pointing and tracking, and data-take initiation. System incorporates three main subsystems which include: (1) viewfinder telescope, (2) control panel and electronics assembly, and (3) IR-spectrometer case assembly.

B75-10043

REFRACTING LENS SYSTEM FOR LOW-SCATTER STAR-TRACKER: A CONCEPT

Innovator not given (Optics Res Laboratories) Apr. 1975 See also NASA-CR-134224

MSC-14724

"Low Scatter Lens Design/Development" discusses studies of low-scatter lens system. Two sections cover optical design and scattering analysis for model of lens system which rejects radiation. Result of computations are shown on computer printouts attached to report.

B75-10047

ACOUSTICALLY CONTROLLED INTEGRATED LASER FOR COMMUNICATIONS SYSTEMS

C. Elachi

Apr. 1975

NPO-13175

Acoustic wave creates fringes by producing periodic stresses in substrate and in film. Laser carrier frequency is then changed by simply changing acoustical frequency. When two acoustical sources are applied off beam axis, beam can be scanned at very rapid rates.

B75-10048

AUTOMATICALLY-FOCUSING MICROSCOPE SYSTEM FOR LIVE TISSUE OBSERVATION

M. N. Mansour, C. P. Chapman, and H. J. Wayland

Apr. 1975

NPO-13215

System includes focus-sensing arrangement which controls servo to keep microscope constantly focused on target. Microscope objective is moved along optical axis. System includes two video cameras that are used as transducers for sensing focus. Incoming visual image is split by beam splitter so that one-half of information is fed to each camera.

B75-10050

RESONANT CHAMBERS FOR SUSPENDING MATERIALS IN AIR

T. G. Wang, M. W. Saffren, and D. D. Elleman

Apr. 1975

NPO-13263

Acoustical pressure of standing wave is used to suspend materials inside resonant chambers. Material is driven to standing-wave antinodes where pressure is lowest. Pressure at nodes is greatest, which prevents suspended material from collecting there. Material can be moved inside chambers by changing wave patterns.

B75-10075

HANDBOOK OF NOISE RATINGS

K. S. Pearsons (Bolt, Beranek, and Newman, Inc.) and R. L. Bennet (Bolt, Beranek, and Newman, Inc.)

May 1975 See also NASA-CR-2376

LANGLEY-11799

Handbook announced in Tech Brief is compendium of information describing multifarious noise methods now in use. Reference material gives user better access to definitions, application, and calculation procedures of current noise rating methods.

B75-10080

DATA PROCESSING LARGE QUANTITIES OF MULTISPECTRAL INFORMATION

R. E. Haskell (Oakland Univ.)

May 1975

MSC-14472

Method is combination of digital and optical techniques. Multispectral data is coded into binary matrix format and then encoded onto photographic film. Film is holographically correlated with spectral signature to generate single-class classification map. Number of maps are optically superimposed to produce full-color, multiclass classification map.

B75-10081

INFRARED TUNABLE LASER: A CONCEPT

K. W. Billman

May 1975

ARC-10463

Apparatus in which laser wavelengths of two dyes are mixed in intracavity, nonlinear crystal provides intense source of coherent laser radiation which is tunable from visible through infrared wavelengths of electromagnetic spectrum.

B75-10082

A NONDISPERSIVE INFRARED ANALYZER

J. Dimeff

May 1975 See also B72-10198; B74-10243

ARC-10631

Apparatus retains all advantages of prior nondispersive infrared analysis systems and provides significantly more immunity to type of errors that may be introduced by geometric changes in analysis system. Technique also permits construction of instruments of lower weight, smaller volume, and smaller power consumption.

B75-10087

ANTIRESONANT RING INTERFEROMETER FOR LASER CAVITY DUMPING, MODE LOCKING, AND OTHER APPLICATIONS

A. E. Siegman (Stamford Univ.)

Jun. 1975

HQ-10844

Applications in lasers for antiresonant ring interferometer include coupled laser cavities, variable laser-output coupling, intracavity harmonic-output coupling, mode locking, cavity dumping, and pulse code modulation.

B75-10090

HOLOGRAPHIC DIRECT-VISION SPECTROSCOPE

J. M. Franke

Jun. 1975

LANGLEY-11750

Spectroscopy incorporates two prisms combined with holographic grating as dispersing element. This provides high dispersion with selective undeviated wavelength. Prisms with different indices of refraction and/or angles for construction and reconstruction may be used. Also, different prisms for input and output may be used.

B75-10097

SUPERCONDUCTING QUANTUM-INTERFERENCE DEVICES

P. N. Peters and L. B. Holdeman

Jun. 1975

M-FS-23163

Published document discusses devices which are based on weak-link Josephson elements that join superconductors. Links can take numerous forms, and circuitry utilizing links can perform many varied functions with unprecedented sensitivity. Theoretical review of Josephson's junctions include tunneling junctions, point contact devices, microbridges, and proximity-effect devices.

B75-10098

LARGE-SCALE SOLAR THERMAL COLLECTOR CONCEPTS

L. W. Brantley

Jun. 1975

M-FS-23167

Thermal collector could be used ultimately to power steamplant to produce electricity. Collector would consist of two major subsystems: (1) series of segmented tracking mirrors with two axes of rotation and (2) absorber mounted on centrally located tower.

B75-10099

DICHROMATED-GELATIN HOLOGRAM PROCESS FOR IMPROVED OPTICAL QUALITY

W. C. Stewart (RCA)

Jun. 1975

M-FS-23170

Optical distortions are eliminated by use of wetting agency followed by sequential immersion in several alcohol-water baths of increasing alcohol concentration. Dehydration proceeds uniformly over surface of gelatin. Dried plate is free of optically-distorting thickness variations.

B75-10105

WIDE-FIELD BIREFRINGENT ELEMENTS

A. Miller (RCA)

Jun. 1975

MSC-12677

Birefringent array consists of two plates with retardation properties nearly independent of direction of incident light over unlimited range of wavelengths. Array can be used as birefringent color filter. Optical properties of plates may also be changed electro-optically rather than thermally.

B75-10112

LASER SCANNED IMAGE SENSORS USING PHOTOCONDUCTORS WITH DEEP TRAPS

J. Maserjian

Jun. 1975

NPO-13131

Photoconductor records image when holes and electrons are trapped inside it due to incident photons. Image can be read out by exposing photoconductor to scanning laser beam. Photons from scanning laser empty traps, generating photocurrent. Image information is obtained by detecting this photocurrent synchronously with laser scan.

B75-10115

CHEMICAL-IONIZATION VISIBLE AND ULTRAVIOLET GAS LASERS: A CONCEPT

J. B. Laundenslager

Jun. 1975

NPO-13289

Charge-transfer reactions or Penning ionization reactions are used to produce population inversions between electronic states of molecular ions which should result in stimulated emission in ultraviolet and visible regions. Such lasers could be used in study of short-lived reaction intermediates, crystal structure and scattering, and photolysis.

B75-10116

HEAT-OPERATED CRYOGENIC ELECTRICAL GENERATOR

T. G. Wang, M. M. Saffern, and D. D. Elleman

Jun. 1975

NPO-13303

Generator operation is based upon unusual hydrodynamic properties exhibited by liquid helium below superfluid critical point. Below that temperature, liquid behaves as though it is mixture of two interpenetrating fluids. When transition takes place between superfluid and normal states, conservation of momentum is always balanced by normal fluid.

B75-10118

HIGH-ENERGY LASERS BY USING DISTRIBUTED REFLECTION: A CONCEPT

M. M. Saffren

Jun. 1975

NPO-13346

Lasers may be made with higher energy photons than heretofore possible. It has been proposed that vacuum ultraviolet lasing can be obtained by bombarding superfluid helium with electron beam, while coupling acoustic energy into helium to set up standing waves in fluid.

B75-10119

LASER-TO-ELECTRICITY ENERGY CONVERTER FOR SHORT WAVELENGTHS

J. R. Stirn and Y. C. M. Yeh

Jun. 1975

NPO-13390

Short-wavelength energy converter can be made using Schottky barrier structure. It has wider band gap than p-n junction silicon semiconductors, and thus it has improved response at wavelengths down to and including ultraviolet region.

03 PHYSICAL SCIENCES

B75-10123

DOUBLE-DISCHARGE COPPER-VAPOR LASER

J. C. Chen, N. M. Merheim, and G. R. Russell

Jun. 1975

NPO-13348

Power supply for discharge pulses consists of two capacitors that are made to discharge synchronously with adjustable time intervals. First pulse is switched with hydrogen thyratron, and second by spark gap. Lasing action peaks for appropriate combination of these two parameters.

B75-10124

QUARTZ CRYSTAL MICROBALANCES TO MEASURE WIND VELOCITY AND AIR HUMIDITY

J. B. Stephens and E. G. Lave

Jun. 1975

NPO-13462

Instrument includes four temperature-sensing, Y-cut quartz crystals to determine wind direction, velocity, and temperature. Two additional AT-cut crystals are used to determine air humidity. Entire signal processing is provided by built-in electronics circuits.

B75-10125

SCHOTTKY BARRIER SOLAR CELL PROMISES IMPROVED EFFICIENCY

R. J. Stirn

Jun. 1975 See also B75-10119

NPO-13482

Higher current and higher voltage can be obtained by using Schottky barrier device with wide band-gap semiconductor as top layer and lower band-gap semiconductor underneath. Significant amount of solar radiation that is not absorbed by side band-gap material will be absorbed by narrow band-gap material.

B75-10126

TRANSMISSION LINE FOR S-BAND MASERS

R. C. Clauss and E. R. Wiebe

Jun. 1975

NPO-13504

Transmission-line is coaxial. Its outer conductor is made of thin-wall stainless-steel tube; inside is plated with 0.0025 mm copper and 0.0003 mm gold. This combination gives little microwave loss and adequate thermal isolation.

B75-10127

LASER ACTION GENERATED WITHIN A LIGHT PIPE: A CONCEPT

C. Elachi, G. A. Evans, and C. Yeh

Jun. 1975

NPO-13531

Laser light could be generated within light pipe itself, thereby eliminating coupling losses. Theoretical calculations have shown feasibility of light-pipe laser propagating in circularly-polarized TE mode. It is predicted that fiber-optic distributed-feedback laser would have gain on order of 25 dB.

B75-10128

LASER USING LEAD CHLORIDE VAPOR

C. J. Chen

Jun. 1975

NPO-13615

By applying electric discharge, lead chloride vapor in tube is dissociated into lead and chlorine atoms. Population inversion of lead atoms is attained subsequently by second discharge, before chemical recombination of lead and chlorine has occurred. Optimum time interval between two discharges is required for maximum laser output.

B75-10138

LIFE PREDICTION OF MATERIALS EXPOSED TO MONOTONIC AND CYCLIC LOADING: A TECHNOLOGY SURVEY AND BIBLIOGRAPHY

W. F. Stuhke (Martin Marietta Corp.), J. L. Carpenter, Jr. (Martin Marietta Corp.), N. Moya (Martin Marietta Corp.), and G. Mandel Aug. 1975 See also B75-10139; NASA-CR-134750; NASA-CR-134751; NASA-CR-134752; NASA-CR-134-753; NASA-CR-

134754

LEWIS-12502

Announced survey directs attention toward low cycle fatigue and thermal fatigue experienced at elevated temperatures equivalent to those found in hot end of gas turbine engine. Majority of bibliographic references are on life prediction for materials exposed to monotonic and cyclic loading in high temperature environments.

B75-10139

FRACTURE TOUGHNESS TESTING DATA: A TECHNOLOGY SURVEY AND BIBLIOGRAPHY

W. F. Stuhke (Martin Marietta Corp.), J. L. Carpenter, Jr. (Martin Marietta Corp.), N. Moya (Martin Marietta Corp.), and G. Mandel Aug. 1975 See also B75-10138; NASA-CR-134750; NASA-CR-134751; NASA-CR-134752; NASA-CR-134753; NASA-CR-134754

LEWIS-12503

Announced survey includes reports covering fracture toughness testing for various structural materials including information on plane strain and developing areas of mixed mode and plane strain test conditions. Bibliography references cite work and conclusions in fracture toughness testing and application of fracture toughness test data, and in fracture mechanics analysis.

B75-10141

LASER VELOCIMETER MEASUREMENTS OF HIGH-SPEED COMPRESSIBLE FLOWS

D. A. Johnson

Jul. 1975

ARC-10781

Laser velocimeter results were compared and found to be consistent with those obtained with conventional measurement techniques and existing compressible boundary layer theory. Turbulence information at supersonic speed has been successfully obtained in compressible boundary layer with laser system.

B75-10142

QUICK-CHANGE ABSORPTION COLUMN

G. N. McEwen, Jr. (Natl. Res. Council) and B. A. Williams

Jul. 1975

ARC-10952

Column has end caps held in place by springs; prefilled packs of absorbent can be exchanged quickly. Both ends of metal or plastic body tube of size which can hold adequate amount of absorbent are machined to provide seat for perforated plate and groove for its spring retainer ring.

B75-10147

AN EXPERIMENTAL 100 KILOWATT WIND TURBINE GENERATOR

R. L. Thomas, R. L. Puthoff, J. M. Savino, and W. R. Johnson Aug. 1975 See also NASA-TM-X-71701

LEWIS-12509

Experimental generator consists of two blades mounted on 100 foot tower, driving transmission train and electric generator mounted on top of tower. Machine generates 100 kW of electricity at wind speeds from 18 to 60 miles per hour. Yaw control mechanism automatically orients machine into wind.

B75-10149

INVESTIGATIONS OF MULTIPLE JETS IN A CROSSFLOW

R. E. Walker (Aerojet-Gen. Corp.) and D. L. Kors (Aerojet-Gen. Corp.) Oct. 1975 See also NASA-CR-121217

LEWIS-12102

Study was conducted to determine penetration and mixing characteristics of multiple jets of ambient temperature air injected perpendicularly into ducted mainstream of hot combustion gases.

B75-10158

ANGULAR DEVICE FOR OPTICAL FILTERS

L. W. Overbay

Aug. 1975

LANGLEY-11796

Device provides a means for precise angular adjustment of optical filters in Raman calibration detector units. Device prevents

stray light from entering system and has the capability of repeated alignments to predetermined angles.

B75-10160

AUTOMATED ELECTRONIC SYSTEM FOR MEASURING THERMOPHYSICAL PROPERTIES

T. R. Creel, Jr., R. A. Jones, R. R. Corwin (Beta Industries, Inc.), and J. S. Kramer (Beta Industries, Inc.)

Aug. 1975 See also B73-10447; NASA-CR-2511

LANGLEY-11883

Phase-charge coatings are used to measure surface temperature accurately under transient heating conditions. Coating melts when surface reaches calibrated phase-charge temperature. Temperature is monitored by infrared thermometer, and corresponding elapsed time is recorded by electronic data-handling system.

B75-10176

COMPACT LASER THROUGH IMPROVED HEAT CONDUCTANCE

L. C. Yang

Aug. 1975

NPO-13147

A 16-joule-pulse laser has been developed in which a boron nitride heat-conductor enclosure is used to remove heat from the elements. Enclosure is smaller and lighter than systems in which cooling fluids are used.

B75-10181

A TWO-DEGREE KELVIN REFRIGERATOR

J. B. Stephens and C. G. Miller

Aug. 1975

NPO-13459

Open-cycle cryogenic refrigerator maintains temperature as low as 2K for periods up to six months. Designed to cool an infrared detector, refrigerator can be used in cooling Josephson-junction devices, magnetic bubble domains, and superconducting devices.

B75-10182

ECONOMICAL SOLAR-HEATING OR COOLING SYSTEM WITH NEW SOLAR-ENERGY CONCENTRATORS

K. Shimada

Aug. 1975

NPO-13497

Economical solar energy collector, made from array of cylindrical Fresnel lenses, does not require tracking mechanism. As the sun changes position, lenses focus solar energy on different collector elements.

B75-10183

HIGH-POWER CW LASER USING HYDROGEN-FLUORINE REACTION

P. I. Moynihan

Aug. 1975

NPO-13623

Continuous-wave laser has been proposed based on reaction of hydrogen and fluorine. Hydrogen is produced by dissociation of hydrazine, which can be stored as liquid in light containers at room temperature.

B75-10185

CHARACTERISTICS AND PERFORMANCE STUDY OF MASS SPECTROMETER RESIDUAL GAS ANALYZERS

W. W. Hultzman

Sep. 1975 See also NASA-TN-D-7554

LEWIS-12393

Types of instruments studied were magnetic sector, omega-tron, quadrupole, and monopole. Experimental results obtained included absolute sensitivity to argon, relative sensitivity to ten gases (hydrogen, helium, neon, nitrogen, carbon monoxide, oxygen, argon, carbon dioxide, krypton, and xenon), and cracking patterns for these gases.

B75-10189

COMPARATIVE PERFORMANCE OF TWENTY-THREE TYPES OF FLAT PLATE SOLAR ENERGY COLLECTORS

F. F. Simon

Sep. 1975 See also B74-10086; NASA-TM-X-3059; NASA-TM-X-71793

LEWIS-12511

Report compares efficiencies of 23 solar collectors for four different purposes: operating a Rankine-cycle engine, heating or absorption air conditioning, heating hot water, and heating a swimming pool.

B75-10202

WIDE-ANGLE SUN SENSORS

L. L. Schumacher

Sep. 1975

NPO-13327

Two sensors have been developed: one, single-axis device, is cylindrical; the other, two-axis device, is spherical. Multiple surface deposits of photosensitive material, such as cadmium sulfide, serve as redundancy, ensuring high reliability.

B75-10206

DIFFUSED GUIDES FOR DISTRIBUTED-FEEDBACK LASERS

C. Elachi

Sep. 1975

See also B75-10127

NPO-13544

Proposed waveguide is hollow cylindrical pipe. Inside channel surface is infused with gas or metal molecules, forming periodic cross sections along entire length. Light is scattered at periodic infusions, resulting in distributed feedback. Configuration is suited for capillary gas lasers.

B75-10210

SECONDARY REFLECTORS FOR ECONOMICAL SUN-TRACKING ENERGY COLLECTION SYSTEM: A CONCEPT

C. G. Miller and J. B. Stephens

Sep. 1975 See also B75-10209

NPO-13580

Mechanism is simpler and lower in cost because it moves heat-collector pipe to stay in focus with sun, instead of moving heavy reflectors.

B75-10223

OPTICAL FEEDBACK TECHNIQUE EXTENDS FREQUENCY RESPONSE OF PHOTOCONDUCTORS

S. J. Katzberg

Oct. 1975 See also NASA-TN-D-7727

LANGLEY-11768

Feedback circuit consists of high-gain light-to-voltage converter with frequency-limited nonlinear photoconductor inside feedback loop. Feedback element is visible light-emitting diode with light-out versus current-in characteristic that is linear over several decades.

B75-10224

GUST ALLEVIATION SYSTEM TO IMPROVE RIDE COMFORT OF LIGHT AIRPLANES

E. C. Stewart, W. H. Phillips, and D. E. Hewes

Oct. 1975

LANGLEY-11771

System consists of movable auxiliary aerodynamic sensors mounted on fuselage and connected to trailing-edge flaps by rigid mechanical linkages. System achieves alleviation by reducing lift-curve slope of airplane to such a small value that gust-induced angles of attack will result in small changes in lift.

B75-10226

APPLICATION OF MONOCHROMATIC OCEAN WAVE FORECASTS TO PREDICTION OF WAVE-INDUCED CURRENTS

L. R. Poole

Oct. 1975 See also NASA-TN-D-7861

LANGLEY-11809

Stoke's wave-induced currents are compared, for variety of wind conditions resulting in partially developed seas and for two water depths, with currents induced by average and

03 PHYSICAL SCIENCES

significant monochromatic waves related to Bretschneider spectrum.

B75-10227

NEW AIRCRAFT INSTRUMENT INDICATES TURBULENCE INTENSITY

R. A. Champine and C. W. Meissner, Jr.
Oct. 1975

LANGLEY-11833

System consists of accelerometer, indicator, and necessary electronic circuits for summing and averaging accelerations. Averaging-time feature enables pilot to see large values of accelerations over a short time or smaller accelerations over longer period of time.

B75-10228

VISUAL ALIGNMENT AID

J. M. Franke
Oct. 1975

LANGLEY-11842

Device consists of beam-splitter cube and two 90 deg prisms cemented together. Various components can be made as two pieces, eliminating seams, except beam-splitter diagonal.

B75-10229

STEAM AUTOMOBILE ANALYSIS

J. A. Peoples
Oct. 1975

M-FS-23188

Report includes many charts that present graphically the effects of design parameters on performance. Equations and data are given which can assist designer in selecting among such factors as working medium, horsepower, and engine components.

B75-10232

LEVITATION OF OBJECTS USING ACOUSTIC ENERGY

R. R. Whymark (Intersonics, Inc.)
Oct. 1975

M-FS-23261

Activated sound source establishes standing-wave pattern in gap between source and acoustic reflector. Solid or liquid material introduced in region will move to one of the low pressure areas produced at antinodes and remain suspended as long as acoustic signal is present.

B75-10235

MULTISPECTRAL DATA ANALYSIS: LARSYS III

D. A. Landgrebe (Purdue Univ.)
Oct. 1975

MSC-14823

System uses pattern recognition and interactive data handling techniques applied to remotely sensed data. Basic analysis concept consists of locating data points which are believed to be representative of classes of interest.

B75-10236

TABLE-LOOKUP ALGORITHM FOR PATTERN RECOGNITION: ELLTAB (ELLIPTICAL TABLE)

W. C. Jones, III and W. G. Eppler
Oct. 1975 See also B75-10235

MSC-14866

Remotely sensed unit is assigned to category by merely looking up its channel readings in four-dimensional table. Approach makes it possible to process multispectral scanner data using a minicomputer.

B75-10237

AUTOMATIC SOLAR TRACKER

B. L. Conroy
Oct. 1975

NPO-13630

Mechanism uses differential pressure of condensable fluid against fixed piston to equalize radiant energy on pair of blackbody elements.

B75-10239

SOFT X-RAY LASERS USING DISTRIBUTED-FEEDBACK REFLECTION: A CONCEPT

F. J. Grunthaner
Oct. 1975

NPO-13532

Proposed arrangement consists of large evacuated chamber containing smaller Dewar chamber into which liquid neon is introduced. Zeolite crystal is mounted in wall of chamber, with one side in contact with neon and other exposed to evacuated chamber. Electron gun is used to bombard crystal.

B75-10244

CALCULATION PROCEDURE FOR TRANSIENT HEAT TRANSFER TO A COOLED PLATE IN A HEATED STREAM WHOSE TEMPERATURE VARIES ARBITRARILY WITH TIME

J. Sucec
Nov. 1975 See also NASA-TM-X-3238

LEWIS-12558

Heat transfer equations have been developed to calculate surface temperature and surface heat flux for cooled flat plate when temperature of fluid passing over leading edge varies arbitrarily.

B75-10245

A NEW HIGH TEMPERATURE NOBLE METAL THERMOCOUPLE PAIRING

G. E. Glawe
Nov. 1975

LEWIS-12545

Investigation has revealed reasonably oxidation resistant thermocouple pairing suitable for use in combustor gas streams at temperatures above 1873 K and at pressures above 20 atmospheres.

B75-10248

VARIABLE-VOLUME ATOMIC STORAGE VESSEL FOR HYDROGEN MASERS

H. F. Peters
Oct. 1975

GSFC-11895

Vessel, located in maser cavity, is made from cylindrical, convoluted flexible bellows which can be expanded or contracted along the cylinder axis vertically. Inner surface area remains constant with changing volume, permitting measurement of frequency deviations of excited atoms.

B75-10250

OPTICAL DESIGN COMPUTER PROGRAM: LENS II

Oct. 1975
GSFC-11951

Differential-correction program evaluates optical lens design.

B75-10256

DESIGN PROCEDURE FOR LOW-DRAG SUBSONIC AIRFOILS

J. B. Peterson and A. B. Chen (National Res. Council)
Oct. 1975

LANGLEY-11351

Airfoil has least amount of drag under given restrictions of boundary layer transition position, lift coefficient, thickness ratio, and Reynolds number based on airfoil chord. It is suitable for use as wing and propeller aircraft sections operating at subsonic speeds and for hydrofoil sections and blades for fans, compressors, turbines, and windmills.

B75-10262

TUNEABLE DIODE LASER SPECTROMETER WITH INTEGRAL GRATING

P. C. vonThuna (Arthur D. Little, Inc.)
Oct. 1975

LANGLEY-11830

Grating is used in place of required folding mirror. Arrangement eliminates separate monochromator unit and uses retroreflector for alignment.

B75-10266

INCREASING TERMINAL STRIP EFFICIENCY AT CRYOGENIC TEMPERATURESL. B. Holdeman
Oct. 1975

M-FS-23234

Single-crystal sapphire and quartz have been used to fabricate thermally shorting, electrically insulating terminal boards for incorporation in metal heat-sink blocks.

B75-10268

SINGLE CRYSTALS OF METAL SOLID SOLUTIONS: A STUDYJ. F. Miller (Battelle Memorial Institute) and S. H. Gelles (Battelle Memorial Institute)
Oct. 1975

M-FS-23268

Report describes growth of silver-alloy crystals under widely varying conditions of growth rate, temperature gradient, and magnetic field. Role of gravitation and convection on crystal substructure is analyzed, as well as influence of magnetic fields applied during crystallization.

B75-10272

ULTRAVIOLET HYDROGEN-DISCHARGE LAMPD. E. Kerr (Johns Hopkins Univ.)
Oct. 1975 See also NASA-CR-140316

MSC-14793

Device provides stable flux output for calibration of ultraviolet spectrum.

B75-10279

REFLECTED-WAVE MASERR. C. Clauss
Oct. 1975

NPO-13490

Reflected wave maser amplifier has significantly greater bandwidth than conventional maser amplifiers. Unit needs no retuning to receive wide range of frequencies.

B75-10285

APPARATUS FOR STUDY OF PLASMAS AT ELEVATED TEMPERATURESJ. D. Christian and W. P. Gilbreath
Nov. 1975

ARC-10958

Microwave discharge plasmas take place within heated zone. Changes in weight of specimens in plasma as well as temperature of sample and plasma can be obtained, facilitating determinations of reaction rates and recombination coefficients.

B75-10286

SOUND SEPARATION PROBEM. T. Moore (GE) and E. B. Smith (GE)
Nov. 1975

LEWIS-12507

Probe separates sound waves from turbulent flow pressure fluctuations in ducted airstreams by using principle that sound waves and turbulent flow pressure perturbations travel at different velocities.

B75-10288

INDUCTION HEATING SIMPLIFIES METAL EVAPORATION FOR ION PLATINGT. Spalvins and W. A. Bainard
Dec. 1975

LEWIS-12595

Evaporation by induction heating produces significant degree of metal ionization, enhancing degree of penetration of evaporant on substrate.

B75-10305

READ-ONLY OPTICAL STORAGE MEDIUMR. A. Gange (RCA)
Dec. 1975

M-FS-23169

Photosensitive recording medium consists of thin-film silicone resin deposited on photoconductive substrate. Medium is useful for holographic interferometry studies.

B75-10307

SIGNAL MIXER FOR OPTICAL HETERODYNE RECEIVERS. Levinson (United Aircraft Corp.)
Dec. 1975

M-FS-23251

Incoming signal is mixed with local oscillator signal by a beam splitter inside laser cavity. Laser power can be reduced by 50 to 100 times.

B75-10311

THE IMPACT OF WATER ON FREE-FALLING BODIESH. A. Wright (Bolt Beranek and Newman, Inc.), P. J. Remington (Bolt Beranek and Newman, Inc.), and R. Madden (Bolt Beranek and Newman, Inc.)
Dec. 1975

M-FS-23310

Report discussed measures to cushion impact on body falling into water. Heavy loads are generated by impact and by pressures of water cavity collapsing onto the body.

B75-10315

OPTICAL-NOISE SUPPRESSION UNIT: A CONCEPTJ. L. Horner (Dept. of Transportation)
Dec. 1975

MSC-12640

Device is used with coherent optical-processing spatial-filtering computer. It is inexpensive to manufacture and is made from readily available standard components. Its alignment is not critical.

B75-10328

ELECTRO-OPTICAL DETECTOR TO IMPROVE SENSITIVITY OF A FOCAL-PLANE MASS SPECTROMETERC. E. Giffin
Dec. 1975

NPO-13524

Wedge-shaped microchannel electron multiplier array has been proposed to improve sensitivity of focal-plane mass spectrometer by two to four orders of magnitude.

B75-10329

COLLIMATION OF ELECTRON AND X-RAY BEAMS USING ZEOLITE CRYSTALSF. J. Grunthaner
Dec. 1975

NPO-13557

Zeolite crystals can be used to collimate electron and X-ray beams. Faujasite, naturally occurring crystal in this group, provides structure necessary for collimation.

B75-10332

DEVELOPMENTS IN SPECTROPHOTOMETRY I: AN INSTRUMENT FOR HIGH-RESOLUTION MEASUREMENTS OF OPTICAL INTENSITY AND POLARIZATIONA. L. Fymat
Dec. 1975 See also B75-10333; B75-10335; B75-10338

NPO-13604

Device has resolution required to analyze polarization of the spectra of unknown gases, liquids, or solids (or a mixture of these phases). Such resolution has not been available on conventional instruments.

B75-10333

DEVELOPMENTS IN SPECTROPHOTOMETRY II: A MULTIPLE-FREQUENCY PARTICLE-SIZE SPECTROMETERA. L. Fymat
Dec. 1975 See also B75-10332; B75-10334; B75-10338

NPO-13606

Instrument can be used to remotely determine complete spectrum of sizes of particles of unknown composition suspended in gas or liquid. Device does not require direct physical sample of particles.

03 PHYSICAL SCIENCES

B75-10335

DEVELOPMENTS IN SPECTROPHOTOMETRY III: MULTI-FIELD-OF-VIEW SPECTROMETER TO DETERMINE PARTICLE-SIZE DISTRIBUTION AND REFRACTIVE INDEX

A. L. Fymat

Dec. 1975 See also B75-10332; B75-10333; B75-10338

NPO-13614

Instrument is based on inverse solution to equations for light scattered by a transparent medium. Measurements are taken over several angles of incidence rather than over several frequencies. Measurements can be used to simultaneously determine chemical and physical properties of particles in mixed gas or liquid.

04 MATERIALS/CHEMISTRY

B70-10004

TESTING FILAMENTARY COMPOSITES

DOW, N. F. /GE/ ROSEN, B. W. DATE- MAY 1970

REAN- SEE ALSO NASA-CR-66518

HQ-10268

NOL ring split-dee tensile test has the advantages that the specimen is readily fabricated by winding and the test is performed in a conventional testing machine without special fixtures. Strain gages cannot be mounted, however, and substantial bending moments are introduced.

B70-10011

PREPARATION OF MAGNETIC FERROFLUIDS IN ALTERNATIVE CARRIER LIQUIDS

ROSENSWEIG, R. E. /AVCO APPL. TECHNOL. DIV./

DATE- JUL. 1970

GSFC-10159

Ferrofluids are made by grinding magnetic particles together with a polar surfactant and a nonpolar solvent. The surfactant is adsorbed on the particle surfaces and acts as a coupling agent between the particles and the solvent.

B70-10013

QUANTITATIVE CONVERSION OF WATER TO CARBON DIOXIDE

WARF, J. C. DATE- JUN. 1970

NPO-10731

Method quantitatively converts water vapor to carbon dioxide permitting direct and rapid analysis of mixed-gas streams for water content.

B70-10017

DETERMINATION OF HYDROXYL CONTENT IN IMPURE MAGNESIUM OXIDE

BLOSSER, E. R. HALL, E. H. IDEN, R. B. DATE-

APR. 1970 REAN- SEE ALSO NASA-CR-96385

NPO-10774

Three-step thermal process quantitatively determines the hydroxyl content in samples of magnesium oxide. Analytical method can be adapted to large-scale production of hydroxyl-free magnesium oxide.

B70-10027

A METHOD FOR THE VISUAL DETECTION OF HOLES IN THIN POLYMERIC FILMS

VON VOLKLI, A. D. /BOEING CO./ WIEDEKAMP, K. E.

DATE- APR. 1970

LEWIS-10876

Back-lighting polymeric film with polarized light from a polarizing plate and viewing it through a second plate cross-polarized to the back-lighting provides visual contrast between the flaw and the transparent film.

B70-10054

UNIDIRECTIONAL COMPOSITE STIFFENING

DOW, N. F. /GE/ ROSEN, B. W. DATE- MAY 1970

REAN- SEE ALSO NASA-CR-66518

HQ-10266

Simple structural elements are explored with configurations selected to best utilize composite materials. Combination of the biaxial properties of beryllium or an isotropic composite with the uniaxial properties of one directional filamentary reinforcement is studied.

B70-10058

DIRECTIONALLY SOLIDIFIED SUPERALLOY

WALLACE, J. F. /CASE WESTERN RESERVE UNIV./

DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-89651

NASA-CR-89650

HQ-10522

Cobalt-tungsten superalloy has improved stress rupture characteristics. Appropriate additions were made to this base alloy using microprobe analyses and a fractional factorial experiment.

B70-10080

PROPERTIES OF NONAQUEOUS ELECTROLYTES

FOSTER, J. N. /N. AM. ROCKWELL CORP./ HANSON, D.

C. HON, J. F. KELLER, R. MUIRHEAD, J. S. DATE-

JAN. 1970 REAN- SEE ALSO NASA-CR-1425

LEWIS-11017

Physical property measurements and structural studies conducted in aprotic solvents using various solutes are applicable to the further development of lithium batteries. Structural studies utilize nuclear magnetic resonance and electron paramagnetic resonance techniques.

B70-10081

RENE 41 HEAT TREATMENT ELECTRON MICROSCOPY

HENSLEY, W. E. /N. AM. ROCKWELL CORP./ DATE-

APR. 1970 REAN-SEE ALSO B69-10605 N69-71272

M-FS-18633

Electron microscope helps prevent post-weld strain-age cracking of Rene 41 by identifying in advance microstructures that are detrimental to welding.

B70-10083

MECHANICAL SIEVE FOR SCREENING MINERAL SAMPLES

OTTO, W. P. /CALIF. UNIV./ DATE- AUG. 1970

HQ-10242

Mechanical sieve consists of three horizontal screens mounted in a vertical stack. A combination of rotation and tapping produces an even flow across the screens, dislodges trapped particles, and ensures rapid segregation of the sample.

B70-10084

ELECTRICAL RESISTANCE DETERMINATION OF ACTUAL CONTACT AREA OF COLD WELDED METAL JOINTS

HORDON, M. J. /NORTON RES. CORP./ DATE- JUN.

1970 REAN- SEE ALSO NASA-CR-97678

HQ-10472

Method measures the area of the bonded zone of a compression weld by observing the electrical resistance of the weld zone while the load changes from full compression until the joint ruptures under tension. The ratio of bonding force to maximum tensile load varies considerably.

B70-10092

EFFECT OF HEAT TREATMENT AND SURFACE OXIDATION OF LOW-CYCLE FATIGUE LIFE OF INCONEL

FOSTER, S. D. /N. AM. ROCKWELL CORP./ DATE- JUL.

1970

M-FS-18712

Test program involving specimens with different heat treatment, surface condition, and chemical composition yields low cycle fatigue data on Inconel 718.

B70-10094

ATMOSPHERIC COMPOSITION AFFECTS

HEAT- AND MASS-TRANSFER PROCESSES

BLAKELY, R. L. /MCDONNELL DOUGLAS CORP./ NELSON,

W. G. DATE- JUN. 1970 REAN- SEE ALSO

NASA-CR-891

HQ-10271

For environmental control system functions sensitive to atmospheric composition, components are test-operated in helium-oxygen and nitrogen-oxygen mixtures, pure oxygen, and air. Transient heat- and mass-transfer tests are conducted for carbon dioxide adsorption on molecular sieve and for water vapor adsorption on silica gel.

B70-10100

TENSILE CREEP-RATE OF PYROLYTIC CARBON
FISCHBACH, D. B. DATE- JUN. 1970 REAN- SEE ALSO
NASA-CR-103846
NPO-11254

Stress-change technique, combined with a graphical-interpolation analysis, yields data on the stress and temperature dependence of the creep rate over broad strain and stress or temperature ranges on as-deposited, substrate-nucleated, pyrolytic carbon.

B70-10104

IMPROVED PROCESS OF FABRICATING FERRITE
CORES FOR MAGNETIC LOGIC CIRCUITS
BABA, P. D. /AMPEX CORP./ HECKLER, C. H.
/STANFORD RES. INST./ DATE- JUN. 1970
LANGLEY-10036

Method of processing magnetic ferrite structures enhances their partially set-state properties, so that the threshold magnetomotive force required to produce a specified change of flux is increased.

B70-10105

IMPROVED PROCESS FOR SYNTHESIZING
ANILINOSILANE COMPOUNDS
DUNNAVANT, W. R. /BATTELLE MEM. INST./ MARKLE,
R. A. DATE- APR. 1970
M-PS-14948

New process gives good yields of anilinosilane compounds that can be readily isolated in a high state of purity. S-collidine is used as an HCl acceptor. Silane compounds can be melt-condensed with aromatic diols to provide high molecular weight polyaryloxysilane materials that are of importance in polymer technology.

B70-10114

SOLUBILITY OF NON-POLAR GASES IN
ELECTROLYTE SOLUTIONS
WALKER, R. L., JR. /FLA. UNIV./ DATE- APR. 1970
LEWIS-11052

Solubility theory describes the effects of both concentration and temperature on solute activity coefficients. It predicts the salting-out effect and the decrease in solubility of non-polar gases with increased electrolyte concentration, and can be used to calculate heats of solution, entropies, and partial molal volumes of dissolved gases

B70-10131

POLYMERIZATION OF PERFLUOROBUTADIENE
NEWMAN, J. /MCDONNELL DOUGLAS CORP./ TOY, M.
DATE- JUL. 1970
NPO-10863

Diisopropyl peroxydicarbonate dissolved in liquid perfluorobutadiene is conducted in a sealed vessel at the autogenous pressure of polymerization. Reaction temperature, ratio of catalyst to monomer, and amount of agitation determine degree of polymerization and product yield.

B70-10140

STRESS CORROSION CRACKING EVALUATION OF
PRECIPITATION-HARDENING STAINLESS STEEL
HUMPHRIES, T. S. NELSON, E. E. DATE- JUN. 1970
M-PS-20667

Accelerated test program results show which precipitation hardening stainless steels are resistant to stress corrosion cracking. In certain cases stress corrosion susceptibility was found to be associated with the process procedure.

B70-10146

THE COLUMBIUM-HYDROGEN SYSTEM AND HYDROGEN
EMBRITTELEMENT OF COLUMBIUM
WALTER, R. J. /N. AM. ROCKWELL CORP./ DATE- AUG.
1970
M-PS-18659

Columbium specimens are charged uniformly with hydrogen allowing accurate measurement of the hydrogen content by a procedure involving the removal of hydrogen from flowing argon at 2000 degrees F. Hydrogen content effects on the ductile-to-transition temperature are determined for temperatures between 200 and 600 degrees F.

B70-10162

EFFECTS OF HIGH PRESSURE HYDROGEN ON METALS
CHANDLER, W. T. /N. AM. ROCKWELL CORP./ WALTER,
R. J. DATE- APR. 1970

R. J. DATE- APR. 1970
M-PS-18612

Hydrogen environment embrittlement causes failure of hydrogen storage vessels at and below design pressures of 5000 to 6000 psi. Investigation of thirty-five alloys determines their susceptibility to such embrittlement.

B70-10175

HIGH TEMPERATURE RARE EARTH SOLID LUBRICANTS
SLINEY, H. E. DATE- JUN. 1970 REAN- SEE ALSO
NASA-TN-D-5301
LEWIS-10983

Rare earth trifluorides have potential use as lubricating fillers for mechanical carbons and as coatings on metallic substrates. Friction experiments show that they are effective in reducing metallic wear.

B70-10177

NEUTRON-ACTIVATION ANALYSIS APPLIED TO
COPPER ORES AND ARTIFACTS
LINDER, N. F. DATE- APR. 1970
ARG-10446

Neutron activation analysis is used for quantitative identification of trace metals in copper. Establishing a unique fingerprint of impurities in Michigan copper would enable identification of artifacts made from this copper.

B70-10182

PREPARATION OF FINE-PARTICLES AT CRYOGENIC
TEMPERATURES
GLOBUS, H. /AEROJET GEN. CORP./ DATE- APR. 1970
NPO-10250

Flash freezing process yields gelling agent for use at cryogenic temperatures. Vaporized material, diluted with an inert gas, is injected below the surface of an agitated cryogenic liquid. This method disperses particles of chlorine trifluoride in liquid oxygen difluoride.

B70-10183

TUNGSTEN FIBER-REINFORCED NICKEL SUPERALLOY
WITH GREATLY INCREASED STRENGTH AT
2000 DEGREES F
PETRASEK, D. W. SIGNORELLI, R. A. DATE- JUN.
1970 REAN - SEE ALSO NASA-TN-D-5575
LEWIS-10933

Superalloy has 1000-hour strength of 37,000 psi at 2000 degrees F. The strength to density ratio of the composite is also greater, permitting applications where reduced weight rather than greater strength is desired.

B70-10185

GRINDING AS AN APPROACH TO THE PRODUCTION
OF HIGH-STRENGTH, DISPERSION-STRENGTHENED
NICKEL-BASE ALLOYS
ORTH, N. W. QUATINETZ, M. WEETON, J. W. DATE-
APR. 1970 REAN- SEE ALSO NASA-TN-D-5421
LEWIS-10515

Mechanical process produces dispersion-strengthened metal alloys. Power surface contamination during milling is removed by a cleaning method that involves heating thin shapes or partially-compacted milled powder blends in hydrogen to carefully controlled temperature schedules.

B70-10199

FATIGUE PROPERTIES OF SHEET, BAR, AND CAST
METALLIC MATERIALS FOR CRYOGENIC
APPLICATIONS
GREEN, E. F. /N. AM. ROCKWELL CORP./ DATE- SEP.
1970
M-PS-18427

Cryogenic fatigue and tensile properties for metallic materials are determined in the operating life-time range of ten thousand to ten million cycles at room temperature, at minus 320 degrees F, and at minus 423 degrees F. Results are presented as stress versus number of cycles to failure.

B70-10205

DESIGN AND EVALUATION OF THREE-PHASE
FIBROUS COMPOSITE STRUCTURES
DOW, N. F. /GE/ ROSEN, B. W. DATE- AUG. 1970
REAN- SEE ALSO NASA-CR-66518
HQ-10267

04 MATERIALS/CHEMISTRY

Study reveals composite combination evaluations for boron binder reinforcements for unidirectionally reinforced boron/epoxy, glass binder reinforcements for unidirectionally reinforced boron/epoxy, and glass binder reinforcements for unidirectionally reinforced glass/epoxy.

B70-10206

GROWTH OF PHASE-PURE, CRACK-FREE SINGLE CRYSTALS AND LARGE-GRAINED POLYCRYSTALS OF MOLYBDENUM DISILICIDE

ROSSETTI, M. /LITTLE /ARTHUR D., INC./ DATE- APR. 1970 REAN- SEE ALSO NASA-CR-98504 HQ-10450

High purity molybdenum disilicide crystals are prepared by zone melting sintered compacts. This method yields single crystals or polycrystals free from macrocracks which allow better measurement and evaluation of mechanical properties.

B70-10208

EFFECTS OF DECONTAMINATION, STERILIZATION, AND THERMAL VACUUM ON POLYMERIC PRODUCTS
ROPER, W. D. DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-103426

NPO-11250

Adhesives, coatings, coated fabrics, elastomers, encapsulants, films, hardware and structural materials, and tapes are tested in a series of physical, mechanical, and electrical tests. Material properties are measured before and after exposure to the three environments.

B70-10210

OXIDATION RESISTANT IRON AND NICKEL ALLOYS FOR HIGH TEMPERATURE USE

HILL, V. L. /IIT RES. INST./ MISRA, S. K. WHEATON, H. L. DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-72522

LEWIS-10936

Iron-base and nickel-base alloys exhibit good oxidation resistance and improved ductility with addition of small amounts of yttrium, tantalum, hafnium, and thorium. They can be used in applications above the operating temperatures of the superalloys, if high strength materials are not required.

B70-10213

MECHANICAL PROPERTIES OF RENE-41 AFFECTED BY RATE OF COOLING AFTER SOLUTION ANNEALING
PRAGER, M. /N. AM. ROCKWELL CORP./ DATE- SEP. 1970

M-PS-18790

Investigation of Rene-41 cooling rate from 1975 to 1400 degrees F reveals that slow cooling improves high-temperature ductility and provides more uniform properties throughout a manifold. Ambient elongation and impact resistance are not significantly changed.

B70-10222

SELF-LUBRICATING FLUORINE SHAFT SEAL MATERIAL

MUNK, W. R. /PRATT AND WHITNEY AIRCRAFT/ DATE- JUL. 1970

HQ-10112

Lubricating film is produced by a reaction of fluorine with a composite of aluminum oxide and nickel powder. The rate of nickel fluoride generation is proportional to the rate at which the fluoride is rubbed off the surface, allowing the seal to operate with the lowest possible heating.

B70-10233

REACTIONS OF TECHNETIUM HEXAFLUORIDE WITH NITRIC ACID, NITROSYL FLUORIDE, AND NITRIL FLUORIDE

HOLLOWAY, J. H. SELIG, H. DATE- APR. 1970

ARG-10412

Stoichiometry of technetium hexafluoride reactions is studied. Magnetic properties and infrared spectra of reaction products are studied and compared with those of analogous complexes of the hexafluorides of tungsten, rhenium, and osmium.

B70-10235

USE OF NONWETTABLE MEMBRANES FOR WATER TRANSFER

HAUSCH, H. G. DATE- DEC. 1970

LANGLEY-10743

Transfer of water through nonwetable vinyl fluoride membranes has two unique features - /1/ very low water transfer rates can be held constant by holding temperature and solute concentrations constant, /2/ the pressure gradient against which water is transported is limited only by solution breakthrough or membrane strength.

B70-10243

TECHNIQUES FOR FORMING SKIN PANELS FOR LARGE-DIAMETER CYLINDERS FROM ALUMINUM-2014

IRVINE, C. N. DATE- OCT. 1970

M-PS-14385

Study of brake forming of skin panels from 2014 aluminum alloy concludes that forming from T651 temper is the best method available. T451 temper material has the greatest potential for production of stress-free parts. Age-forming characteristics of 2014-T451 and 2219-T37 alloys are compared.

B70-10258

PROGRESS IN RESEARCH ON CHLORATE CANDLE TECHNOLOGY

LITTHAN, J. /GARRETT CORP./ DATE- APR. 1970

MSC-13409 MSC-13410 MSC-13411

Research and development program improves sodium chlorate candle formulation, production method, and igniter design. Cobalt is used as the fuel, dry processing methods are used to lower the water content, and a device based on pyrotechnic heater concepts is used as the igniter.

B70-10259

METAL COOLDOWN, FLOW INSTABILITY, AND HEAT TRANSFER IN TWO-PHASE HYDROGEN FLOW

MANSON, L. /N. AM. ROCKWELL CORP./ MILLER, W. S. DATE- MAY 1970 REAN- SEE ALSO B69-10541

M-PS-18696

Studies of the properties of five metals with varying tube-wall thickness, with or without and internal coating of trifluorochloroethylene polymer, show that wall characteristics influence flow stability, affect heat transfer coefficients, and influence the transition point from dry- to wet-wall flow.

B70-10261

MECHANISM AND KINETICS OF AGING IN INCONEL 718

HENSLEY, W. E. /N. AM. ROCKWELL CORP./ KOEPKE, B. G. ZETO, R. J. DATE- JUN. 1970

M-PS-18775

Age hardening in Inconel 718 is investigated using Brinell hardness measurements. Formation of a precipitate causes an increase in hardness.

B70-10273

LIGHTWEIGHT, HIGH-STRENGTH, REINFORCED PLASTIC TUBE-FRANGING DIE

BUSH, S. /NORTHROP CORP./ CASELDINE, H. SMITH, R. H. DATE- MAY 1970 REAN- SEE ALSO

NASA-CR-66301

LANGLEY-10126

Dies of a phenolic molding compound with chopped glass fibers as fill material possess a flexural strength of 20,000 psi and a compressive strength of 28,500 psi.

B70-10285

INVESTIGATION OF THE REACTIVITY OF ORGANIC MATERIALS IN LIQUID OXYGEN

CHAMBERLAIN, D. /STANFORD RES. INST./ IRWIN, K. KIRSHEN, N. MILL, T. STRINGHAM, R. DATE- JUN. 1970

M-PS-20576

Measurements of impact-ignition sensitivity and studies of the relative reactivity of t-butoxy and t-butyl peroxy radicals toward a variety of organic compounds reveal improved methods of selection of materials for safe use in a liquid oxygen environment.

B70-10294

DESIGN METHOD FOR ADSORPTION BEDS

BLAKELY, R. /MCDONNELL DOUGLAS CORP./ JACKSON, J. DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-891 HQ-10269

Regenerable adsorption beds for long-term life support systems include synthetic zeolite to remove carbon dioxide and silica gel to dehumidify the atmospheric gas prior to its passage through the zeolite beds. Bed performance is evaluated from adsorption characteristics, heat and mass transfer, and pressure drop.

B70-10300

POLYIMIDE POLYMERS PROVIDE IMPROVED ABLATIVE MATERIALS

BURNS, E. /TRW SYSTEMS GROUP/ JONES, J. LUBOWITZ, H. DATE- JUL. 1970 REAN- SEE ALSO B69-10118 LEWIS-10861

Principle heat absorption of silica-reinforced plastic ablative materials occurs from the in-depth reaction of silica with carbon to form silicon monoxide and carbon monoxide. The higher the degree of completion of this reaction, the higher the capacity of the ablative material to absorb heat.

B70-10310

HIGH PRECISION CRYOGENIC THERMAL CONDUCTIVITY STANDARDS

HUST, J. G. /NATL. BUR. OF STD./ POWELL, R. L. WEITZEL, D. H. DATE- JUN. 1970 NUC-10555 NUC-10556

New apparatus allows accurate simultaneous measurement of thermal conductivity, electrical resistivity, and thermopower for technically important materials, such as new or uncommon alloys. A list of materials investigated is presented. Sources for obtaining data on these materials, as well as the source giving a description of the apparatus, are cited.

B70-10316

BIAXIAL PRESTRESSING OF BRITTLE MATERIALS

GRESZCZUK, L. /MCDONNELL DOUGLAS CORP./ MILLER, R. NETTER, W. DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-98136 M-FS-20272

Strengthening of chemically consolidated zirconia with tungsten fibers, graphite fibers, sapphire whiskers, and silicon carbide whiskers is investigated. Addition of silicon carbide whiskers gives the highest increase in strength of zirconia at room and elevated temperatures. Prestressing with tungsten cables increases tensile strength and ductility.

B70-10327

CONTROLLED ETCHING OF PRINTED-CIRCUIT BOARDS

KOVELL, S. P. SCHUTT, J. B. DATE- AUG. 1970 XGS-06306

Ferric chloride in an aqueous medium etches copper from the surface of printed-circuit boards. Ferric ions are reduced to ferrous ions resulting in a reduced etching rate.

B70-10330

POLYIMIDE POLYMERS PROVIDE HIGHER CHAR YIELD FOR GRAPHITIC STRUCTURES

BURNS, E. A. /TRW SYSTEMS GROUP/ JONES, J. F. LUBOWITZ, H. R. DATE- AUG. 1970 REAN- SEE ALSO B69-10118 LEWIS-10860

Technique for manufacture of graphite composites uses high-char-forming processable polyimide resin systems to produce the graphitic matrix. Only three cyclic steps are required to yield a 99.7 percent graphite product.

B70-10333

UNIFORM DATA SYSTEM STANDARDIZES TECHNICAL COMPUTATIONS AND THE PURCHASING OF COMMERCIALY IMPORTANT GASES

JOHNSON, V. J. /NATL. BUR. OF STD./ MC CARTY, R. D. ROPER, H. M. DATE- SEP. 1970 NUC-10549

Integrated tables of pressure, volume, and temperature for the saturated liquid, from the

triple point to the critical point of the gases, have been developed. Tables include definition of saturated liquid curve. Values are presented in metric and practical units. Advantages of the new tables are discussed.

B70-10334

DIFUNCTIONAL POLYISOBUTYLENE PREPARED BY POLYMERIZATION OF MONOMER ON MOLECULAR SIEVE

MIDLER, J. A., JR. DATE- AUG. 1970 NPO-10893

Process yields difunctional isobutylene polymers ranging in molecular weight from 1150 to 3600. These polymers have the potential for copolymerization and cross-linking with other monomers to form elastomeric materials.

B70-10349

OPEN-CELLED POLYURETHANE FOAM

RUSSELL, L. W. /AMETEK/STRAZA/ DATE- SEP. 1970 KSC-10517

Open-celled polyurethane foam has a density of 8.3 pounds per cubic foot and a compressive strength of 295 to 325 psi. It is useful as a porous spacer in layered insulation and as an insulation material in vacuum tight systems.

B70-10353

PREPARATION OF HIGHLY FLUORINATED DIOLS CONTAINING ETHER LINKAGES.

ROCHOW, S. E. /PENINSULAR CHEMRES., INC./ STUMP, E. C., JR. DATE- SEP. 1970 NPO-10768

Hydroxy-terminated perfluoroethers and polyurethane resins derived from ethers have outstanding chemical resistance and good thermal properties. They can be used as potting compounds, coatings, and seals. The hydroxy-terminated ethers serve as intermediates in the synthesis of highly fluorinated elastomers and adhesives.

B70-10361

SIMPLE METHOD FOR PREDICTING VISCOSITY OF GAS MIXTURES

BROKAW, R. S. DATE- OCT. 1970 REAN- SEE ALSO NASA-TN-D-4496 LEWIS-11060

Method is derived from the Chapman-enskog theory which describes viscosities at low-to-moderate pressures. Mixtures of nonpolar gases require the viscosities and molecular weights of the constituents in addition to the mixture composition. Dipole moments, boiling points and liquid boiling point densities are also needed with polar gases.

B70-10364

LOW-TEMPERATURE EMBRITTLEMENT OF TI-6AL-4V AND INCONEL-718 BY HIGH PRESSURE HYDROGEN

CHANDLER, W. T. /N. AM. ROCKWELL CORP./ WALTER, R. J. DATE- NOV. 1970 M-FS-18753

Notched specimens of titanium alloy and Inconel-718 exhibit little reduction of notch strength at certain low temperatures under 2000 lb/sq in. hydrogen, unnotched specimens are not embrittled at these temperatures. The degree of Inconel-718 embrittlement is lower than earlier observations under 1000 lb/sq in. hydrogen.

B70-10366

EFFECTS OF HYDROGEN ON ELI TITANIUM ALLOY TI-5AL-2.5SN

CHANDLER, W. T. /N. AM. ROCKWELL CORP./ HENSLEY, W. E. DATE- SEP. 1970 M-FS-18815

Tensile tests on titanium alloy, following abrasion under hydrogen and temperature cycling, reveal lowered tensile strength, increased ductility, and no embrittlement. Fretting the metal on itself in flowing hydrogen or abrading with an iron file in flowing hydrogen produces titanium hydride.

B70-10369

THERMAL TREATMENT AND MECHANICAL PROPERTIES OF ALUMINUM-2021

04 MATERIALS/CHEMISTRY

BRENNECKE, M. W. DATE- SEP. 1970 REAN- SEE ALSO
NASA-TM-X-53847
M-FS-20559

Mechanical properties, after thermal treatments, are summarized for sheet and plate of copper-rich, high-strength, heat-treatable aluminum-2021. The alloy is quench sensitive, quench rate and variations in aging affect corrosion behavior. Aging effects on yield strength, tensile strength, and elongation of sheet and plate are compared.

B70-10386

HEAT-REJECTION WINDOWS FOR TELESCOPES

AUSTIN, R. /PERKIN-ELMER CORP./ REHNBERG, J.
DATE- SEP. 1970
M-FS-20634

Heat-rejection telescope windows reflect incident solar energy outside the hydrogen-alpha line while processing a peak transmission exceeding fifty percent at 6563 angstrom units. The windows also function as secondary blocking filters to the telescope's Fabry-Perot filter.

B70-10396

INCREASED RESISTANCE TO STRESS CORROSION
OF ALUMINUM ALLOYS

BRUMMER, S. B. /TYCO LABS., INC./ COCKS, F. H.
DATE- SEP. 1970
M-FS-20788

Stress corrosion resistance is increased by distorting surface grain-boundary structure and by interrupting the corrosion and stress corrosion. The first is accomplished by machining or shot peening and the second by removal from and later reexposure to the corrosive environment.

B70-10402

IMPROVED PHOTOIONIZATION MASS SPECTROMETER

POSHCHENRIEDER, W. P. /GCA. CORP./ SAMSON, J. A.
R. WARNECK, P. DATE- SEP. 1970 REAN- SEE ALSO
NASA-CR-1018
LANGLEY-10180

Improved spectrometer for gas analysis lessens the intensity problem that occurs in obtaining dispersed ultraviolet radiation. A filter, consisting of a selectively transmitting gas cell, a thin film or mirror, or a predispersing grating, alleviates problems of interference from higher-order spectral lines and from scattered ultraviolet light.

B70-10403

NEW HYPERTHERMAL THERMOSETTING

HETEROCYCLIC POLYMERS

BLOW, N. /HUGHES AIRCRAFT CO./ LANDIS, A. L.
MILLER, L. J. DATE- AUG. 1970 REAN- SEE ALSO
NASA-CR-1310
LANGLEY-10221

Polyimidazopyrrolone polymers, formed by the condensation of aromatic dianhydrides with aromatic tetraamines in various solvents, form moldings that resist degradation in air and retain great strength at 400 to 700 degrees F. The resins have good insulating properties, are easy to mold, and make good protective coatings.

B70-10404

DETONATION HAZARDS WITH **SAFE** INDUSTRIAL

SOLVENTS

FINGERHOOD, C. R. /N. AM. ROCKWELL CORP./ DATE-
SEP. 1970
LANGLEY-10299

Sensitivities of various metal/halocarbon slurries to impact are given. Barium and lithium shavings show sensitivity with all of the halocarbons tested except methyl chloroform. Powdered aluminum, magnesium titanium, and beryllium show sensitivity with several halocarbons but generally require a higher level of initial energy.

B70-10419

THIN FILM DEVICES USED AS OXYGEN PARTIAL
PRESSURE SENSORS

CANADY, K. S. /RES. TRIANGLE INST./ WORTMAN, J.
J. DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-1182
XLA-06473

Electrical conductivity of zinc oxide films to be used in an oxygen partial pressure sensor is measured as a function of temperature, oxygen

partial pressure, and other atmospheric constituents. Time response following partial pressure changes is studied as a function of temperature and environmental changes.

B70-10423

STRAIN COMPATIBILITY TESTS FOR SPRAYED

FOAM CRYOGENIC INSULATION

HILL, W. L. /N. AM. ROCKWELL CORP./ KIMBERLIN,
D. O. DATE- DEC. 1970
M-FS-16063

Mechanical stress applied to foam-coated aluminum alloy specimens maintained at cryogenic temperature simulates actual use conditions of the foam insulation. The testing reveals defects in the polyurethane foam or in the foam to metal bond.

B70-10432

READILY FIBERIZABLE GLASSES HAVING A HIGH
MODULUS OF ELASTICITY

BACON, J. F. /UNITED AIRCRAFT CORP./ DATE- OCT.
1970 REAN- SEE ALSO NASA-CR-789992
HQ-10593

New glass compositions yield composites having higher moduli of elasticity and specific moduli of elasticity than commercially available glasses. Over a reasonable temperature range the glasses have a viscosity of about 20,000 poises. They consist of silica, alumina, magnesia, and beryllia, plus at least one uncommon oxide.

B70-10444

COPPER-TITANIUM EUTECTIC ALLOY IMPROVES

ELECTRICAL AND MECHANICAL CONTACT TO
SILICON CARBIDE

SHIER, J. S. DATE- NOV. 1970
ERC-10256

Contact preparation at low temperatures is possible with the use of a copper-titanium eutectic alloy. Contacts formed with this alloy are ohmic on p-type silicon carbide and rectifying on n-type.

B70-10450

INTUMESCENT COATINGS AS FIRE RETARDANTS

FISH, R. H. FOHLEN, G. M. PARKER, J. A. SANKO,
P. M. DATE- SEP. 1970
ARC-10099

Fire-retardant paint, when activated by the heat of fire, reacts to form a thick, low-density, polymeric coating or char layer. Water vapor and sulphur dioxide are released during the intumescent reaction.

B70-10453

PROCESS FOR SYNTHESIZING A NEW SERIES OF
FLUOROCARBON POLYMERS

TOY, M. S. /MCDONNELL DOUGLAS CORP./ DATE- NOV.
1970
NPO-10862

Two-step process for preparing fluorocarbon materials includes - /1/ adding gaseous fluorine to a polyperfluoropolyene to create fluorocarbon radicals, with reactive sites at unsaturated carbon atoms, and /2/ introducing a monomer, after evacuation of fluorine gas, and allowing copolymerization with the free radicals.

B70-10463

COLLOIDION TECHNIQUE OF MIRROR CLEANING

TYNDALL, J. B. DATE- AUG. 1970
LANGLEY-10675

Cleaning method is modified by addition of a layer of cheesecloth between thin coatings of U.S.P. collodion. After drying, the collodion is peeled off by an even pull on the cheesecloth, leaving the mirror clean and ready for use.

B70-10467

FRICTION CHARACTERISTICS OF GRAPHITE AND
GRAPHITE-METAL COMBINATIONS AT VARIOUS
TEMPERATURES

MANJOINE, M. J. /WESTINGHOUSE ASTRONUCL. LAB./
DATE- NOV. 1970
NUC-10151

Characteristics of the coefficient of friction of graphite and of graphitic combinations between 70 and 4000 degrees F are given. Graphite's good frictional quality is attributed to a gas film on surface platelets. Major factors investigated

are, surface finish and **wear in**, surface conditioning, temperature, and interfacial pressure.

B70-10475

TECHNIQUE FOR DEPOSITING SILICON DIOXIDE ON INDIUM ARSENIIDE IMPROVES ADHESION
SPON- INNOVATOR NOT GIVEN /GE/ DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-86039, NASA-CR-86231
ERC-10130

Planar array processing of indium arsenide wafers includes dicing into a prescribed geometry, then cleaning and drying, and finally pre-oxidizing in an oxygen atmosphere at 500 degrees C. The last step forms an oxide interface between the InAs surface and a glow discharge deposited layer of silicon dioxide.

B70-10490

FLAME-RESISTANT THIN PANELS OF GLASS FABRIC-POLYIMIDE RESIN LAMINATES
KAUMEYER, R. A. /N. AM. ROCKWELL CORP./ YOSHINO, S. Y. DATE- NOV. 1970
MSC-15562

With a cured polyimide resin content of less than about 20 percent by weight of the finished part, glass fabric laminates which have good structural properties and are self-extinguishing in a pure oxygen atmosphere can be prepared in the thickness range of 0.035 to 0.08 inch.

B70-10497

NEW METHOD FOR PHOTORESIST STRIPPING
DAVERN, W. E. /GE/ TOBIN, L. S. DATE- SEP. 1970
ERC-10239

Vacuum dehydration of negatively working photoresist eliminates trace contamination of conventional stripping methods. The semiconductor substrate is coated with photoresist, exposed, developed, cured, and etched, and then placed in a vacuum. Following dehydration, the resist film is removable with ordinary solvents.

B70-10504

SOLUBLE HIGH MOLECULAR WEIGHT POLYIMIDE RESINS
JONES, R. J. /TRW SYSTEMS GROUP/ LUBOWITZ, H. R. DATE- OCT. 1970
LEWIS-11056

High molecular weight polyimide resins have greater than 20 percent /by weight/ solubility in polar organic solvents. They permit fabrication into films, fibers, coatings, reinforced composite, and adhesive product forms. Characterization properties for one typical polyimide resin are given.

B70-10506

EFFECTS OF CRYSTAL DEFECTS ON STRESS-CORROSION SUSCEPTIBILITY IN ALUMINUM ALLOY 7075
BENTLE, G. G. /N. AM. ROCKWELL CORP./ JACOBS, A. J. DATE- SEP. 1970 REAN- SEE ALSO B67-10533, B68-10153, B70-10527
M-FS-18794

Point defects were introduced into specimens of three heat-treated tempers of alloy 7075 by neutron irradiation. Continuous ultrasonic monitoring allowed crack growth to be observed. Effects on stress-corrosion susceptibility, elongation, hardness, and yield strength are noted and compared for the three tempers.

B70-10520

NONDESTRUCTIVE SPOT TESTS ALLOW RAPID IDENTIFICATION OF METALS
WILSON, M. L. DATE- SEP. 1970
LANGLEY-10539

Ordered qualitative test sequence, presented in flow chart form, permits identification of all common metallurgical elements and many high-temperature, stainless, high and low carbon, and tool steels within about 30 minutes. Identification is made from colors or specific reactions produced by the addition of standard chemical reagents.

B70-10527

THE MECHANISM OF STRESS-CORROSION CRACKING IN 7075 ALUMINUM ALLOY

JACOBS, A. J. /N. AM. ROCKWELL CORP./ DATE- OCT. 1970
M-FS-18614

Various aspects of stress-corrosion cracking in 7075 aluminum alloy are discussed. A model is proposed in which the continuous anodic path along which the metal is preferentially attacked consists of two phases which alternate as anodes.

B70-10531

ECONOMIC METHOD FOR MEASURING ULTRA-LOW FLOW RATES OF FLUIDS
BOGDANOVIC, J. A. /NORTHROP CORP./ KELLER, W. P. DATE- OCT. 1970
NPO-12064

Capillary tube flowmeter measures ultra-low flows of very corrosive fluids /such as chlorine trifluoride and liquid fluorine/ and other liquids with reasonable accuracy. Flowmeter utilizes differential pressure transducer and operates on the principle that for laminar flow in the tube, pressure drop is proportional to flow rate.

B70-10540

CHEMICAL TREATMENT MAKES AROMATIC POLYAMIDE FABRIC FIREPROOF IN OXYGEN ATMOSPHERE
CARDWELL, R. O. /MONSANTO RES. CORP./ HOLSTEN, J. R. RIVES, J. W. DATE- NOV. 1970
MSC-13571 MSC-13572

Organic fabric is reacted first with vapors of a phosphorus oxychloride, phosphorus oxybromide solution and then with bromine vapor, after neutralization it is flameproof in pure oxygen atmosphere. Soaking the fabric with mixture of ammonium polyphosphates increases flame resistance, but the polyphosphates are leached out during laundering.

B70-10546

NEW TYPE OF NONFLAMMABLE PAPER
ARMSTRONG, G. K. /DYNATECH CORP./ DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-101977
MSC-13432

Nonflammable paper is made from fibers of chrysotile asbestos, beta-glass fibers, glass microfibers, and a little nonflammable organic binder. It does not propagate flame in an atmosphere of 16.5-psig oxygen, and it is resistant to rot and mold, making it acceptable as wrapping material and for stored documents.

B70-10551

PREPARATION OF THIN POLYMER FILMS FOR INFRARED REACTION RATE STUDIES
GARRARD, G. G. /N. AM. ROCKWELL CORP./ HOUSTON, D. W. DATE- NOV. 1970
MSC-15893

Procedure for preparing thin films for infrared spectrophotometric analysis involves pressing of a neat mixture of reactants between nonreactive thin polymer films with noninterfering absorption bands. Pressing is done under a pressure that gives desirable thickness. Following this process, the film sandwich is cut to accommodate the laboratory instrument.

B70-10571

ELECTRON FRACTOGRAPHY USED TO EXAMINE NICKEL-BASE ALLOYS
JEWETT, R. P. /N. AM. ROCKWELL CORP./ DATE- NOV. 1970
M-FS-18649

Electron fractography establishes causes of metal fatigue and stress failures. Technique produces surface features at magnification as high as 9000X with excellent resolution. Method permits observation of features with dimensions of only 50 angstroms.

B70-10573

FILLED POLYMERS FOR BEARINGS AND SEALS USED IN LIQUID HYDROGEN
JOHNSON, R. L. WISANDER, D. W. DATE- OCT. 1970
REAN- SEE ALSO NASA-TN-D-5073
LEWIS-10887

Filled polytrifluorochloroethylene /PTFCE/ shows better thermal stability, less creep, and higher compressive moduli than filled polytetrafluoroethylene /PTFE/. Bearing and seal materials exhibiting the best characteristics

04 MATERIALS/CHEMISTRY

contain a high percentage of PTFCE.

B70-10574

PHOTOCHROMISM OF DIHYDROQUINOLINES

BECKER, R. S. /HOUSTON UNIV./ KOLC, J. DATE- DEC. 1970

HQ-10574

Reversible photochromic reactions, in which absorption spectrum of chemical compound may be shifted by application of visible or ultraviolet light, and then returned to original state by heating, are observed for certain members of 1,2-dihydroquinoline family. Structural formulas for colorless and colored states are given.

B70-10576

LOW-TEMPERATURE RADIATION-RESISTANT MATERIAL FOR BALL-BEARING RETAINERS

DESAU, P. O. /AEROJET-GEN. CORP./ EMMONS, W. F. DATE- NOV. 1970

NUC-10058

Radiation resistant material, made of polyimide polymers and S-glass cloth, is used in ball bearing retainers for extreme environments. Material displays satisfactory wear resistance, lubricity, and stability. Results of comparative tests with fluorocarbon materials are given.

B70-10578

LOW TEMPERATURE ABLATION MODELS MADE BY

PRESSURE/VACUUM APPLICATION

FISCHER, M. C. HEIER, W. C. DATE- NOV. 1970

LANGLEY-10676

Method developed employs high pressure combined with strong vacuum force to compact ablation models into desired conical shape. Technique eliminates vapor hazard and results in high material density providing excellent structural integrity.

B70-10585

SILICON SOLAR CELLS IMPROVED BY LITHIUM

DOPING

BERMAN, P. A. DATE- NOV. 1970 REAN- SEE ALSO

NASA-CR-106770

NPO-11390

Results of conference on characteristics of lithium-doped silicon solar cells and techniques required for fabrication indicate that output of cells has been improved to point where cells exhibit radiation resistance superior to those currently in use, and greater control and reproducibility of cell processing have been achieved.

B70-10588

DETERMINATION OF NITROGEN IN TITANIUM NITRIDE

PHILIPP, W. H. TETZLAFF, J. E. DATE- NOV. 1970

LEWIS-11046

Quantitative determination of nitrogen in titanium nitride involves dissolution of TiN in 10N hydrofluoric acid containing an oxidant. Released nitrogen is determined as ammonia. Best oxidizers are ferric chloride, potassium iodate, and potassium dichromate.

B70-10600

POTASSIUM SILICATE-ZINC OXIDE SOLUTION FOR

METAL FINISHES

SCHUTT, J. B. DATE- DEC. 1970

GSFC-10361

Examples of zinc dust formulations, which are not subject to cracking or crazing, are fire retardant, and have high adhesive qualities, are listed. The potassium silicate in these formulations has mol ratios of dissolved silica potassium oxide in the range 4.8 to 1 - 5.3 to 1.

B70-10612

EVALUATION OF POLYMERIC PRODUCTS FOR USE IN THERMAL-VACUUM ENVIRONMENT

MURACA, R. F. /STANFORD RES. INST./ WHITTICK, J.

S. DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-89557

NPO-11288

Of 350 materials screened for outgassing characteristics, 100 qualify within the limits of less than 1 percent weight loss and less than 0.1 percent VCM /volatile condensable material/ content. Infrared absorbance spectra of the VCM

from 96 polymeric products and an interim list of recommended products are identified.

B70-10618

RESONANCE TUBE IGNITER

CONRAD, E. W. PAVLI, A. J. PHILLIPS, B. R.

DATE- NOV. 1970 REAN- SEE ALSO NASA-TM-X-1460

LEWIS-11219

Resonance induced in stoichiometric mixtures of gaseous hydrogen-oxygen produces temperatures /over 1100 deg F/ high enough to cause ignition. Resonance tube phenomenon occurs when high pressure gas is forced through sonic or supersonic nozzle into short cavity. Various applications for the phenomenon are discussed.

B70-10621

STAINLESS STEEL 301 AND INCONEL 718

HYDROGEN EMBRITTLEMENT

ALLGEIER, R. K. FORMAN, R. DATE- DEC. 1970

MSC-13557

Conditions and results of tensile tests of 26 Inconel 718 and four cryoformed stainless steel specimens are presented. Conclusions determine maximum safe hydrogen operating pressure for cryogenic pressure vessels and provide definitive information concerning flaw growth characteristics under the most severe temperature and pressure conditions

B70-10634

HIGH-TEMPERATURE OXIDATION AND

EROSION-RESISTANT REFRACTORY COATINGS

PETERSON, D. A. WINTER, J. M. DATE- NOV. 1970

REAN- SEE ALSO NASA- NASA-TN-D-4964

LEWIS-11221

Various refractory coating systems were evaluated for rocket nozzle applications by actual rocket test firings. A reference is noted which identifies failure mechanisms and gives results of the firing tests for 18 coating systems. Iridium, iridium-rhenium, and hafnium oxide-zirconium oxide coatings show most promising results.

B70-10644

NONFLAMMABLE ORGANIC ADHESIVES EFFECTIVE OVER

WIDE TEMPERATURE RANGE

MC LEOD, A. /WHITTAKER CORP./ DATE- DEC. 1970

REAN- SEE ALSO NASA-CR-102176

MSC-13586

Series of highly fluorinated polyurethanes have been prepared as basis for development of nonflammable structural adhesives for use over wide temperature range. Backbone of polyurethanes is polyether of perfluoropropylene oxide. Adhesive system is developed that exhibits adequate strength properties and is self-extinguishing in oxygen-rich atmospheres.

B70-10645

INHIBITED 1,1,1-TRICHLOROETHANE REPLACES

TRICHLOROETHYLENE FOR DEGREASING

SCHULER, F. T. /N. AM. ROCKWELL CORP./ DATE-

DEC. 1970

M-FS-18844 M-FS-18845

In fight against air pollution inhibited TCE /1,1,1-trichloroethane/ is effective substitute for trichloroethylene in degreasing plants. This chemical has only slight photochemical activity and causes little eye irritation. TCE is less toxic than trichloroethylene and can withstand production loads and conditions, or long term storage, without degradation.

B70-10661

SPECTRAL EMISSION MEASUREMENT OF IGNEOUS

ROCKS USING A SPECTRORADIOMETER

HUNTON, W. D. DATE- DEC. 1970

M-FS-20837

Spectroradiometer is used for either close or remote identification of rocks not heated to high temperatures. Instrument yields reproducible data spectra with excellent signal-to-noise ratios and readily identifiable spectral details, including differences in subclasses.

B70-10666

INEXPENSIVE, REMOVABLE COATING FOR PLASTER

TOOLING

DIMINO, J. M. /N. AM. ROCKWELL CORP./ MARTIN, R.
R. DATE- DEC. 1970
MSC-15819

Procedure for thinning and spaying a vinyl material provides strippable film for plaster surfaces. Coating is low-cost, effective seal against moisture and other sources of damage. Coating consists of a mixture of hot-spray vinyl material and 30 to 50 percent by volume of methyl ethyl ketone.

B70-10672
LOW-COST HIGH-TEMPERATURE BRAZING MATERIAL
REPAS, G. TULISIAK, G. DATE- DEC. 1970
LEWIS-11209

Commercially available nickel-copper wire containing 6 and 12 percent nickel is used in high temperature furnace brazing of rocket engine parts. Brazed joints have properties comparable to or better than those brazed with more expensive materials, and cost savings are substantial.

B70-10674
OXIDATION-RESISTANT COATINGS FOR REFRACTORY METALS USED IN INERT ATMOSPHERES
PHILLIPS, W. M. DATE- DEC. 1970 REAN- SEE ALSO
N67-15683
NPO-11477

Test conditions and results are reported for various coatings on a 1 percent zirconium columbium alloy at a temperature of 2000 deg F. Molybdenum silicide over molybdenum is most effective coating, tin-aluminum coating is adequately protective, chromium-molybdenum silicides are not protective.

B70-10676
CRYSTAL GROWING BY ELECTRODEPOSITION FROM DENSE GASEOUS SOLUTIONS
NAIDITCH, S. /UNITED SCI. ASSOCIATES, INC./
WILLIAMS, R. A. DATE- DEC. 1970
NPO-10440

Single crystals and dendritic formations of silver are grown on platinum electrodes by electrodeposition from a dense gaseous solution of silver nitrate in ammonia. Process is modification of hydrothermal process, and also differs from standard electrodeposition by permitting single crystals to be grown from hydrogen-bonded solvents.

B71-10004
PREPARATION OF PERFLUOROPOLYETHER PREPOLYMERS
ROCHOW, S. E./PENINSULAR CHEMRES., INC./ STUMP, E. C., JR.
JAN. 1971 SEE ALSO B70-10353 B71-10005
NPO-10765

Fluorinated prepolymers are used to generate highly fluorinated polymers which possess most of the desirable properties of polytetrafluoroethylene, such as nonflammability and high corrosion resistance, while retaining good low temperature flexibility.

B71-10005
PREPARATION OF HIGHLY FLUORINATED POLYURETHANES
ROCHOW, S. E./PENINSULAR CHEMRES., INC./ STUMP, E. C., JR.
JAN. 1971 SEE ALSO B70-10353 B71-10004
NPO-10767

New polyurethanes, formed from a reaction of a prepolymer diol and a perfluorinated diisocyanate, are nonflammable and possess high corrosion resistance and good low temperature flexibility. Polymer hardness increases rapidly with increasing ratio of diisocyanate to diol, but its glass transition temperature is not adversely affected.

B71-10009
FAST PEAK SELECTOR FOR MASS SPECTROMETER
PASKO, R. M./GARRETT CORP./ SAWYER, G. M.
JAN. 1971
LANGLEY-10268

Analytical tool rapidly determines quantities of up to six preselected molecular species in a gaseous sample. Novel features include - /1/ ability to operate in two modes, /2/ stepping rate of two species per second, and /3/ capability for recording analysis results directly in volume percent.

B71-10010
NEW TANTALUM ALLOY HAS SUPERIOR CREEP RESISTANCE AND GOOD WORKABILITY
BUCKMAN, R. W., JR. JR.
JAN. 1971

B71-10027
REMOTE DETERMINATION OF SEA CONDITIONS BY ELECTROMAGNETIC BACKSCATTER MEASUREMENT
MALTZ, P. M./LOCKHEED PALO ALTO LABS./
JAN. 1971
M-PS-13777

Report is described which considers the effect that the ocean's surface shape has on near-vertical backscatter. Report covers the statistical character of the surface, the relation between these statistics and electric field, the characteristics of the wave system, and electromagnetic scattering.

B71-10034
ZERO-G SIMULATION SYSTEM FOR THERAPEUTIC APPLICATION
DANE, D. H.
MAR. 1971
M-PS-14671

System aids in therapeutic retraining of damaged muscles or functions as walking support during therapy. Articulated harness assembly contains patient, suspension system supports harness assembly in such a way as to counterbalance exertion of external forces on patient.

B71-10042
PRODUCING GRAPHITE WITH DESIRED PROPERTIES
DICKINSON, J. M./LOS ALAMOS SCI. LAB./ IMPRESCIA, R. J. REISWIG, R. D. SMITH, M. C.
FEB. 1971
NUC-11001

Isotropic or anisotropic graphite is synthesized with precise control of particle size, distribution, and shape. The isotropic graphites are nearly perfectly isotropic, with thermal expansion coefficients two or three times those of ordinary graphites. The anisotropic graphites approach the anisotropy of pyrolytic graphite.

B71-10055
AUTOMATIC BIO-SAMPLE BACTERIA DETECTION SYSTEM
CHAPPELLE, E. W. COLBURN, M. KELBAUGH, B. N. PICCIOLO, G. L.
APR. 1971
GSFC-11169

Electromechanical device analyzes urine specimens in 15 minutes and processes one sample per minute. Instrument utilizes bioluminescent reaction between luciferase-luciferin mixture and adenosine triphosphate (ATP) to determine number of bacteria present in the sample. Device has potential application to analysis of other body fluids.

B71-10058
LOW TEMPERATURE FLUID BLENDER
REPAS, G. A.
APR. 1971
LEWIS-11206

Blender supplies hydrogen at temperatures from 289 deg K to 367 deg K. Hydrogen temperature is controlled by using blender to combine flow from liquid hydrogen tank /276 deg K/ and gaseous hydrogen cylinder /550 deg K/. Blenders are applicable where flow of controlled low-temperature fluid is desired.

B71-10061
A CONCEPT FOR IMPROVING THE DIMENSIONAL STABILITY OF FILAMENTARY COMPOSITES IN ONE DIRECTION
DOW, N. F./GE/ ROSEN, B. W.
APR. 1971 SEE ALSO NASA-CR-1324
LANGLEY-10443

Investigation of filamentary composites having high strength and stiffness and a zero thermal coefficient of expansion in one direction shows that advanced filament materials, such as boron, have substantial advantages over conventional filamentary composites. Various other results are discussed, including guidelines and analysis methods for further evaluation.

04 MATERIALS/CHEMISTRY

B71-10077

NONFLAMMABLE ORGANIC-BASE PAINT FOR OXYGEN-RICH ATMOSPHERES

HAWEEL, R. J. KEY, C. F. KRUPNICK, A. C.
APR. 1971

M-PS-20486

New paint formulations, which combine aqueous latex paints with inorganic pigments and additives, produce coatings that are self-extinguishing in pure oxygen at pressures up to twice the partial pressure of atmospheric oxygen. A paint formulation in percent by weight is given and the properties of resultant coatings are discussed.

B71-10078

UPDATED, EXPANDED, FLUID PROPERTIES HANDBOOK
GERSHMAN, R./MCDONNELL DOUGLAS CORP./ OSUGI, J. T.
SHERMAN, A. L.
APR. 1971

M-PS-21169

Revised handbook presents quantitative data, in the form of graphs and charts, pertaining to thermodynamic properties of specific cryogenic fluids and several metals. References to sources of data are cited.

B71-10079

RIGID OPEN-CELL POLYURETHANE FOAM FOR CRYOGENIC INSULATION

FADDOL, J. R. LINDQUIST, C. R./UNION CARBIDE CORP./
NIENDORF, L. R. NIES, G. E. PERKINS, P. J.
MAY 1971 SEE ALSO NASA-TM-X-52332

LEWIS-11220

Lightweight polyurethane foam assembled in panels is effective spacer material for construction of self-evacuating multilayer insulation panels for cryogenic liquid tanks. Spacer material separates radiation shields with barrier that minimizes conductive and convective heat transfer between shields.

B71-10097

SALT STABILIZER FOR PREVENTING CHLORINE DEPLETION AND INCREASING SHELF-LIFE OF POTABLE WATER - A CONCEPT
COPELAND, E. J./N. AM. ROCKWELL CORP./ EDGERLEY, R. H.
MAY 1971

MSC-17153

Proposed concept, based on law of mass action uses addition of salt to increase chlorine ions produced in sodium hydrochlorite solutions, thereby increasing solution shelf-life. This technique is not costly. Usefulness will be determined by acceptability of salt in product undergoing long shelf-life.

B71-10099

ULTRASONIC METAL ETCHING FOR METALLOGRAPHIC ANALYSIS
YOUNG, S. G.

MAY 1971 SEE ALSO NASA-TN-D-6014

LEWIS-11230

Ultrasonic etching delineates microstructural features not discernible in specimens prepared for metallographic analysis by standard chemical etching procedures. Cavitation bubbles in ultrasonically excited water produce preferential damage /etching/ of metallurgical phases or grain boundaries, depending on hardness of metal specimens.

B71-10104

METAL ALLOY RESISTIVITY MEASUREMENTS AT VERY LOW TEMPERATURES

CHILDS, G. E./NBS/ CLARK, A. P. WALLACE, G. H.

MAY 1971

NUC-10557

High speed, automated system accurately measures to approximately one percent in three minutes. System identifies materials having constant thermal or electric conductivity, predicts new material properties, develops alloys in accordance with desired specifications, and develops nondestructive devices for measuring precipitation hardening.

B71-10105

THERMAL CONDUCTIVITY OF GASEOUS AND LIQUID HYDROGEN
DILLER, D. E./NBS/ ROPER, H. M.

MAY 1971

NUC-10558

Normal and para-hydrogen conductivity measurements at temperatures from 200 to 17 deg K, at densities up to 2.6 times critical density, and at pressures to 15 MN/sq m are made. Using new calorimeter, data are analyzed as functions of density at fixed temperatures and of temperature at fixed densities

B71-10149

INEXPENSIVE ANTI-FOG COATING FOR WINDOWS

CARRIN, D. L., JR./BROWN AND ROOT-NORTHRUP/ MORRISON, H. D.

MAY 1971

MSC-13530

Coating applications include anti-fog protection for deep-sea diving equipment, fire protection helmets, and windows of vehicles used in hazardous environments. Basic coating composition includes liquid detergent, deionized water, and oxygen compatible fire-resistant oil. Composition prevents visor fogging under maximum metabolic load for 5 hours and longer.

B71-10154

SYNTHESIS OF FLUORINATED ORGANIC COMPOUNDS USING OXYGEN DIFLUORIDE

TOY, H. S./MCDONNELL DOUGLAS, INC./

JUN. 1971

NPO-12061

Oxygen difluoride synthesis is a much simpler, higher-yield procedure than reactions originally followed to synthesize various fluorinated organic compounds. Extreme care is taken in working with oxygen difluoride as its reactions present severe explosion hazard.

B71-10158

EFFECT OF SIZE ON CRACKING OF MATERIALS

GLUCKLICK, J.

JUN. 1971 SEE ALSO JPL-TR-32-1438

NPO-11602

Brittle behavior of large mild steel elements, glass plasticity, and fatigue specimen size sensitivity are manifestations of strain-energy size effect. Specimens physical size effect on material cracking initiation occurs according to flaw distribution statistics. Fracture size effect depends on stability or instability of crack propagation.

B71-10161

NEW UNDERSTANDING OF FIBER COMPOSITE MATERIALS

ZWEBER, C.

JUN. 1971

NPO-11605

Statistical bounding approach to study of filamentary composites provides understanding of their fracture mechanics. Comparison shows that bounds are in good agreement with data from several fiber-matrix systems, and that they can be used to interpret strength data and provide fracture behavior information leading to improved strength.

B71-10165

AUTOMATIC AMINO ACID ANALYZER

BERDAHL, B. J. CARLE, G. C. OYAMA, V. I.

JUN. 1971

ARC-10215

Analyzer operates unattended or up to 15 hours. It has an automatic sample injection system and can be programmed. All fluid-flow valve switching is accomplished pneumatically from miniature three-way solenoid pilot valves.

B71-10172

PREPARATION OF HOMOGENEOUS VITREOUS MATERIALS FOR ELECTRONIC AND OPTICAL DEVICES

GATOS, H. C./MIT/ PLATAKIS, N. S. WITT, A. F.

JUN. 1971

HQ-10670

Vitreous material builds up as series of solidified layers on inside walls of sealed quartz ampoule containing molten constituents of material, and forms well defined shapes to close dimensional tolerances. Ampoules are made of material which does not react with melt and has lower thermal expansion coefficient than solidified layer.

B71-10184
POLYMER CONTAINING FUNCTIONAL END GROUPS IS BASE FOR NEW POLYMERS
HIRSHFIELD, S. M./N. AM. ROCKWELL CORP./
JUN. 1971
NPO-10998
Butadiene is polymerized with lithium-p-lithiophenoxide to produce linear polymer containing oxy-lithium group at one end and active carbon-lithium group at other end. Living polymers represent new approach to preparation of difunctional polymers in which structural features, molecular weight, type and number of end groups are controlled.

B71-10195
TEARDOWN ANALYSIS FOR DETECTING SHELF-LIFE DEGRADATION
ECKSTEIN, A. S.
JUN. 1971
M-PS-24017
Analysis is guideline in examining component materials, analytically determining physical properties and chemical compositions, and developing control data necessary for ascertaining effects of environments and their influence on deterioration and degradation mechanisms.

B71-10197
EROSION OF METALS BY MULTIPLE IMPACTS WITH WATER
RUDY, S. L./HYDRONAUTICS, INC./ THIRUVENGADAM, A.
JUN. 1971 SEE ALSO NASA-CR-1288
HQ-10591
Investigation determines - relation between impact velocity and minimum number of impacts producing visible erosion, relation between high frequency fatigue stresses and number of cycles to failure, water-hammer stresses relation to high frequency endurance limit, erosion rate as exposure time function, and correlates experimental data with recent theory.

B71-10198
IMPROVED FIRE-RESISTANT COATINGS
HUTT, J. B. STUART, J. W.
JUN. 1971
GSFC-10072
Water-base coatings containing potassium silicate show improvement in areas of quick air-drying, crack, craze, and abrasion resistance, adherence, and leach resistance. Coatings are useful as thermal-barrier layers in furnaces, and as general purpose fire resistant surfaces where vapor impermeability is not a requirement.

B71-10208
NONDESTRUCTIVE TESTING OF ADHESIVE BONDS BY NUCLEAR QUADRUPOLE RESONANCE METHOD
HEWITT, R. R./ARA, INC./
JUL. 1971 SEE ALSO NASA-CR-61988
M-PS-21160
Inert, strain sensitive tracer, cuprous oxide, added to polymeric adhesive ensures sufficiently large signal to noise ratio in NQR system output. Method is successful, provided that RF-transparent structural materials are used between modified adhesive and probe of NQR spectrometer.

B71-10209
SENSITIVE GASEOUS HYDROGEN DETECTION SYSTEM
MACINTYRE, J. R./GE/ NEPPLE, W. C.
JUL. 1971 SEE ALSO NASA-CR-10268
M-PS-21161
System utilizing new type hydrogen sensor has overall detection sensitivity and response speed higher than conventional hot-wire or hot-thermistor detectors. System measures concentrations of from 2 parts per million to 30 percent and is adaptable as leak detector and hazard alarm wherever hydrogen is used.

B71-10210
A NEW METALATION COMPLEX FOR ORGANIC SYNTHESIS AND POLYMERIZATION REACTIONS
HIRSHFIELD, S. M./N. AM. ROCKWELL CORP./
JUL. 1971
NPO-10313
Organometallic complex of N,N,N',N' tetramethyl ethylene diamine /TMEDA/ and lithium acts as metalation intermediate for controlled synthesis

of aromatic organic compounds and polymer formation. Complex of TMEDA and lithium aids in preparation of various organic lithium compounds.

B71-10216
UNIQUE INTERMETALLIC COMPOUNDS PREPARED BY SHOCK WAVE SYNTHESIS
OTTO, G. REECE, O. I. ROY, U./ALA. UNIV./
JUL. 1971
M-PS-20861
Technique compresses fine ground metallic powder mixture beyond crystal fusion point. Absence of vapor pressure voids and elimination of incongruous effects permit application of technique to large scale fabrication of intermetallic compounds with specific characteristics, e.g., semiconduction, superconduction, or magnetic properties.

B71-10217
PROMISING BORON/GRAPHITE/RESIN COMPOSITES
EVENSEN, H. A./WITTAKER CORP./
JUL. 1971 SEE ALSO NASA-CR-102944
M-PS-21126
Lightweight composite has high specific strength and stiffness and remains effective under extreme environmental conditions. Use as engineering material is feasible because it has excellent mechanical properties and is easily produced within small tolerances on constituent volume fractions. Main benefit of composite is its improved longitudinal strength and modulus.

B71-10225
STRAIN GAGE PERFORMANCE ABOVE 1033 K
NICHOLS, D. W./N. AM. ROCKWELL CORP./
JUL. 1971
M-PS-18831
Study provides compendium of test methods and results which may be used in evaluating high temperature environment gage behavior. Tests include resistance to ground and drift rate and gage factor variation as temperature function. Variation ranged from zero at room temperature (297 K) to 14.5 percent at 1053 K.

B71-10229
OXIDATION-RESISTANT SILICIDE COATING APPLIED TO COLUMBIUM ALLOY SCREEN
TORGERSON, R. T./BOEING CO./
JUL. 1971 SEE ALSO NASA-CR-73246
ARC-10186
Coated screens withstand temperature cycling in special transpiration-cooling systems and provide porous surface that is effective at temperatures well above those limiting superalloy screen efficiency. Thickness of coating depends on time, temperature and activator concentration. Coatings are uniform and resistant to thermal cycling.

B71-10245
EVALUATION OF OMNIWEAVE REINFORCEMENT FOR COMPOSITE FABRICATION
BELMAN, R./GE/ EDIGHOFFER, H. FENTON, R. LOWE, D. WEXLER, M.
JUL. 1971 SEE ALSO NASA-CR-102916
M-PS-20946
Molded composites made from type-2 Morganite and/or boron are suitable for structural skins. Layered-in-depth omniweave construction yields higher in-plane strength characteristics than fiber-pitch angle construction, and strength and moduli data vary with fiber orientation.

B71-10255
STATISTICAL CHARACTERIZATION OF PHENOLIC-NOVOLAK STRUCTURES
PARKER, J. A. WINKLER, E. L.
JUL. 1971
ARC-10393
Three statistical methods of general validity are valuable for characterizing any polymer which results from chain polymerization of multifunctional branching monomers linked through bifunctional monomers.

B71-10259
MODIFICATION OF PHYSICAL PROPERTIES OF FREEZE-DRIED RICE

04 MATERIALS/CHEMISTRY

HUBER, C. S./TECHNOL. INC./
JUL. 1971
MSC-13540

Freeze cycling process consists of alternately freezing and thawing precooked rice for two cycles, rice is then frozen and freeze-dehydrated in vacuum sufficient to remove water from rice by sublimation. Process modifies rice grain structure and porosity, enabling complete rehydration in one minute in hot water.

B71-10261
IMPROVED EPOXY RESIN FOR CONSTRUCTING CRYOGENIC FILAMENT-WOUND PRESSURE VESSELS
MOLHO, R./AEROJET-GEN. CORP./ SOFFER, L. M.
JUL. 1971 SEE ALSO NASA-CR-72114
LEWIS-11261

Mechanical properties of new resin at cryogenic temperatures are substantially improved over similar composite structures utilizing conventional resins, while properties at ambient temperature are identical to conventional resin composites.

B71-10277
MODIFICATIONS TO A VACUUM ASSISTED FILTERING DEVICE TO MINIMIZE CONTAMINATION
GAUDIANO, S.
AUG. 1971
MSC-13733

High purity filter unit saves time and expense in laboratory operations and improves purity of liquids processed. Any but most viscous liquids are processed by modified unit equipped with appropriate filter medium. Unit's use eliminates much glassware cleaning tedium.

B71-10278
A SILVER ION WATER STERILIZATION SYSTEM
PARRY, E. P./N. AM. ROCKWELL CORP./
AUG. 1971
MSC-15734

Small amounts of silver are incorporated in mixture of ion exchange resins, and water passing through this mixture is thus exposed to silver ion concentration. System is useful in self-contained water systems except city water systems where residual chlorine level is stipulated.

B71-10289
IMPROVED INSULATING MATERIALS EFFECTIVE AT EXTREMELY HIGH TEMPERATURES
CARLSON, L. W./N. AM. ROCKWELL CORP./
AUG. 1971
NPO-12067

Wrapped molybdenum foil with silica fabric insulation and wrapped tantalum foil with carbon fabric insulation are usable to 1367 K and up to 2478 K, respectively, both offer marked space saving and efficiency in high temperature operations. Graph displays temperature profiles at end of firing period.

B71-10290
GRANULAR TWO-PHASE INSULATION SYSTEMS
CARPENTER, H. W./ROCKETDYNE/
AUG. 1971 SEE ALSO B71-10289
NPO-12068

Easily prepared system, consisting of matrix of hollow zirconia microspheres containing dispersed tungsten powder, produces minimum-cost, prototype test specimen. Combination represents basic concept of highly reflective dispersed phase in low density insulative matrix and is stable at 2200 K. Other combinations of materials are suggested.

B71-10291
POLYMERIZATION OF PERFLUOROBUTADIENE AT NEAR-AMBIENT CONDITIONS
TOY, M. S./MC DONNELL DOUGLAS CORP./
AUG. 1971
NPO-10447

Peroxide catalyst under mild conditions initiates homopolymerization of perfluoro butadiene to new linear perfluoro polyenes and vulcanizable fluoro elastomers. Resulting polyperfluoro butadiene serves as hard elastomer for good chemical resistance, as intermediate in graft

polymerizations, and as crosslink for high molecular weight materials.

B71-10297
EXPERIMENTAL DETERMINATION OF DAMPING PARAMETERS OF VISCOELASTIC MATERIALS
HOWARD, R. T./IBM/ MACE, E. W.
AUG. 1971
M-PS-20534

Tuned-resonance method requires measurement of maximum transmissibility and frequency at that point to determine dynamic modules and loss modulus of elasticity.

B71-10300
SYNTHESIS OF A NEW CLASS OF HIGHLY FLUORINATED ALIPHATIC DIISOCYANATES
WARNER, D. A./PENINSULAR CHEMRES., INC./
AUG. 1971
M-PS-20883

Synthesis is basis for preparation of polyurethanes that are compatible with liquid oxygen. The two step process preparation from fluorocarbon diacid fluorides is explained in text.

B71-10303
COATINGS FROM COPOLYMERS OF TETRAPHENOXYSILANE AND P,P'-BIPHENOL
DUNNAVANT, W. R./BATTELLE MEM. INST./ MARKEL, R. A.
OCT. 1971 SEE ALSO NASA-CR-85820
M-PS-14947

Resultant resin from copolymers is highly crosslinked and completely aromatic. Procedure develops polyaryoxysilane structure in situ after the substrate has first been coated with a prepolymer. Resins are useful as protective coatings for metals, ceramics, glass, and other materials that accommodate relatively high curing temperatures.

B71-10310
INVESTIGATION TO IDENTIFY PAINT COATINGS RESISTIVE TO MICROORGANISM GROWTH
COOPER, C. W./BATTELLE MEM. INST./ KEMP, H. T.
AUG. 1971 SEE ALSO B69-10181, NASA-CR-111524
M-PS-20458

All selected coatings contain nutrients that support microbial growth and survival. Incorporation of microbiocidal agents into coatings more susceptible to attack is recommended for improved inhibition of microorganism growth and for increased protection against deterioration of coatings by microorganisms.

B71-10317
INSTANT ACTING ADHESIVE SYSTEM
DAVIS, T. R./NATL. CASH REGISTER CO./ HAINES, R. C.
AUG. 1971
MSC-13732

Adhesive develops 80 percent of minimum bond strength of 250 psi less than 30 sec after activation is required. Adhesive is stable, handles easily, is a low toxic hazard, and is useful in industrial and domestic prototype bonding and clamping operations.

B71-10319
ESTIMATING CARBON MONOXIDE EXPOSURE
EDGERLEY, R. H./N. AM. ROCKWELL CORP./
AUG. 1971
MSC-17211

Method predicts effects of carbon monoxide on astronauts confined in spacecraft cabin atmospheres. Information on need for low toxicity level also applies to confined spaces. Benefits are applicable to industry and public health.

B71-10320
RAPID METHOD FOR SAMPLING METALS FOR MATERIALS IDENTIFICATION
HIGGINS, L. E./N. AM. ROCKWELL CORP./
AUG. 1971
MSC-17332

Nondamaging process similar to electrochemical machining is useful in obtaining metal samples from places inaccessible to conventional sampling methods or where methods would be hazardous or contaminating to specimens. Process applies to

industries where metals or metal alloys play a vital role.

B71-10331

SOLVENT AGENT FOR DISULFIDE PRECIPITATES FROM INHIBITED GLYCOL-WATER SOLUTIONS

TAYLOR, M. F./BOEING CO./

DEC. 1971

MSC-13695

Small additions /0.01 percent or less/ of triethanolamine sodium sulfite adduct to mercapto benzothiazole inhibited glycol water heat transfer solutions containing disulfide precipitate produce marked reduction in amount of precipitate. Adduct is useful as additive in glycol base antifreezes and coolants.

B71-10339

NEW MATERIALS FOR FIREPLACE LOGS

KIESELBACK, D. J./CONTINUING EDUC. PROJ./ SMOCK, A. W.

SEP. 1971

M-FS-21363

Fibrous insulation and refractory concrete are used for logs as well as fireproof walls, incinerator bricks, planters, and roof shingles. Insulation is lighter and more shock resistant than fireclay. Lightweight slag bonded with refractory concrete serves as aggregate.

B71-10342

NASA-TRICOT - A LIGHTWEIGHT, RADAR REFLECTIVE, KNITTED FABRIC

MATHEWS, P. WHITE, E.

SEP. 1971

LANGLEY-10776

Fabric knitted on conventional knitting machines uses commercially available yarns, has high aerodynamic drag capability, and is relatively inexpensive. The two yarn components used are 15-denier nylon monofilament and aluminized Hylar tape.

B71-10356

EXPLOSIVE BONDED TZM-WIRE-REINFORCED C129Y COLUMBIUM COMPOSITES

REECE, O. Y.

SEP. 1971

M-FS-20925

Technique consists of positioning layers of TZM metal filaments between thin C129Y columbium sheets and joining multiple sheet stacks by single explosive joining operation. Metallurgical bonds are excellent, external heat is not required, process is relatively inexpensive, and resulting composites are considerably stronger than base alloy.

B71-10359

SIMPLIFIED PROCEDURE FOR EMISSION SPECTROCHEMICAL ANALYSIS

GORDON, W. A.

SEP. 1971 SEE ALSO B67-10404, NASA-TN-D-5532

LEWIS-10985

Procedure involves dissolution of samples to prepare them for analysis, and uses single set of experimental conditions to analyze wide variety of materials and compositions without compromising analysis accuracy. Automated spectrometer alloys per sample analysis time of four minutes after sample dissolution.

B71-10362

EFFECTS OF THE THERMAL STERILIZATION PROCEDURE ON POLYMERIC PRODUCTS

CAMPBELL, B. A. KALPANY, S. H.

SEP. 1971 SEE ALSO NASA-CR-80434

NPO-11688

Properties of samples are tested, after thermal exposure, and values are compared with unexposed samples. Thermal stability or compatibility ratings of formulated or compounded organic polymers using trade names are made and degree of change in measured properties is assessed. Products are rated compatible, marginal, or not compatible.

B71-10393

ANTIPOLLUTION SYSTEM TO REMOVE NITROGEN DIOXIDE GAS

NETZLER, A. J. SLOUGH, J. W.

OCT. 1971

LEWIS-11297

Gas phase reaction system using anhydrous ammonia removes nitrogen dioxide. System consists of ammonia injection and mixing section, reaction section /reactor/, and scrubber section. All sections are contained in system ducting.

B71-10394

RESIN ADDITIVE IMPROVES PERFORMANCE OF HIGH-TEMPERATURE HYDROCARBON LUBRICANTS

JOHNSON, R. L. LOOMIS, W. R.

OCT. 1971 SEE ALSO NASA-CR-72615

LEWIS-11364

Paraffinic resins, in high temperature applications, improve strength of thin lubricant film in Hertzian contacts even though they do not increase bulk oil viscosity. Use of resin circumvents corrosivity and high volatility problems inherent with many chemical additives.

B71-10403

HIGH-STRENGTH LARGE-DIAMETER CARBON-BASE FIBERS

HOUGH, R. L./HOUGH LAB./

OCT. 1971 SEE ALSO NASA-CR-72770

LEWIS-11167

Material is applicable as reinforcement for metal matrix composites. Composites with large diameter, carbon base monofilaments offer advantages of superior strength at high temperatures and low density and for high temperature equipment where component weight must be minimized.

B71-10411

SCREENING METHOD IMPROVES PERFORMANCE OF NICKEL-CADMIUM BATTERIES

HALPERT, G.

NOV. 1971

GSFC-11260

Weight of single plate in batch is used as criterion for selecting those plates with uniform, high ampere hour capacity. When substrate and plaque weights are uniform, observed current capacity differences are dependent on quantity of active material in plaque.

B71-10434

SHIELDING METHOD FOR POLYCRYSTALLINE AND EPITAXY GROWTHS

BUE, J. L./TRW, INC./

NOV. 1971

M-FS-20162

Technique prevents silicon wafers from adhering to susceptor following silicon epitaxial deposition. Annular ring of refractory material goes around wafer during epitaxial deposit. Silicon is deposited on ring, susceptor, and portions of wafer. Ring breaks away from susceptor and wafer and no silicon undergrowth occurs.

B71-10437

EXTERNALLY PROGRAMMED VARIABLE TIMER

GULBIS, P. R./SPERRY RAND/

NOV. 1971

M-FS-20776

Device satisfies 1-sec, 5-sec, and 10-min timing requirements. Temperature and voltage range accuracy is plus or minus 3.9 percent with voltage variations of 24 to 31 Vdc over temperature range of minus 55 deg C to plus 125 deg C.

B71-10442

THERMALLY STABLE POLYIMIDES FROM SOLUTIONS OF MONOMERIC REACTANTS

DELVIGS, P. LIGHTSEY, G. R. SERAPINI, T. T.

NOV. 1971 SEE ALSO NASA-TN-X-67803

LEWIS-11325

Monomer solutions have high solubility and low solution viscosity. Since monomers are shipped in powder form and reaction to polyimide-acid prepolymer is omitted, the cost is low and handling is easy.

B71-10443

INSOLUBILIZATION PROCESS INCREASES ENZYME STABILITY

BILLINGHAM, J. LYN, J./BATTELLE MEM. INST./

NOV. 1971 SEE ALSO NASA-CR-73354

ARC-10314

04 MATERIALS/CHEMISTRY

Enzymes complexed with polymeric matrices contain properties suggesting application to enzyme-controlled reactions. Stability of insolubilized enzyme derivatives is markedly greater than that of soluble enzymes and physical form of insolubilized enzymes is useful in column and batch processes.

B71-10474

GAS CHROMATOGRAPH SAMPLE-TRANSFER VALVE

WANG, W. S.-S./TRW. INC./ WRIGHT, H. W., JR.

DEC. 1971

ARC-10427

Slide-type gate valve incorporates sampling volume and transfer passageway for guiding a metered quantity of gas from pressurized test cell to gas chromatograph. Gate is moved by pneumatic bellows-type actuator.

B71-10482

GRAPHITE-REINFORCED ALUMINUM COMPOSITE

LALACONA, F. P.

DEC. 1971

M-PS-21077

Metallic composite prepared for utilization which remains intact without aluminum/carbon reactions, is less expensive than other structural materials, and yields a flexible composite material.

B71-10483

DEVELOPMENT OF CONFORMAL COATING MATERIALS

GLICKMAN, S. A./THIokol CHEM. CORP./ SONENSTEIN, G. G.

DEC. 1971 SEE ALSO NASA-CR-102743

M-PS-21393

New polymeric compositions appear useful as coatings on electronic circuitry operating in rigorous environments. Formulation of their compositions is based on nitrosofluorocarbon polymers having active cure sites.

B71-10488

NEW PRIMERS FOR ADHESIVE BONDING OF ALUMINUM ALLOYS

BURRELL, B. W./AVCO CORP./ PORT, W. S.

DEC. 1971 SEE ALSO NASA-CR-102846

M-PS-21387

Synthetic polypeptide adhesive primers are effective, with high temperature epoxy resins, at temperatures from 100 deg to 300 deg C. Lap-shear failure loads and lap-shear strength of both primers are discussed.

B71-10489

HIGH-TEMPERATURE STRENGTH OF PREALLOYED-POWDER

PRODUCTS INCREASED BY HEAT/PRESSURE TREATMENT

ASHBROOK, R. L. FRECHE, J. C. WATERS, W. J.

DEC. 1971 SEE ALSO B69-10293, NASA-TN-D-6072

LEWIS-11229

Heat treatment process involves heating products to a temperature above the solidus, and subsequently applying pressure at a temperature below the solidus. Technique can be modified to one step process involving simultaneous application of both high pressure and heat. Process is not limited to cobalt-base alloys.

B72-10002

SMALL-SCALE EXPLOSIVE WELDING OF ALUMINUM

L. J. Bement

1972

LANGLEY-10941

Welding technique uses very small quantities of explosive ribbon to accomplish small-scale lap-welding of aluminum plates. Technique can perform small controlled welding with no length limitations and requires minimal protective shielding.

B72-10005

FLAME RESISTANT ELASTIC ELASTOMERIC FIBERS

J. T. Howarth (Little /Arthur D./, Inc.) and A. A. Massucco (Little /Arthur D./, Inc.)

Sep. 1972 See also NASA-CR-115227

MSC-13923-4

Development of materials to improve flame resistance of elastic elastomeric fibers is discussed. Two approaches, synthesis of polyether based urethanes and modification of synthesized urethanes with flame retardant additives, are described. Specific applications of both techniques are presented.

B72-10019

EXPERIMENTAL STUDY OF SURFACE CRACKS

Innovator not given (Southwest Res. Inst.) 1972 See also NASA-CR-114934

MSC-14032

Analysis of plastic zones surrounding surface cracks in stressed steel and titanium plates subjected to tensile loading shows that back surface dimpling develops at stress levels considerably lower than those predicted by theoretical models of yield zone penetration into back surface.

B72-10027

IMPROVED ELASTOMER FOR USE WITH OXYGEN DIFLUORIDE

J. W. Martin (TRW Systems Group) and J. L. Bell (TRW Systems Group)

1972 See also NASA-CR-115902

ARC-10528

Method improves resistance of CIS-1,4-poly(butadiene) elastomers to attack by oxygen difluoride at low temperatures by replacing silica reinforcement with less reactive substances. Improved elastomeric compound is utilized in bladders, diaphragms, valves, O-rings and seals.

B72-10028

SPECIMEN FOR HIGH-TEMPERATURE TENSILE TESTS

C. D. Coulbert (Marquardt Co.)

1972

ARC-10531

Split nut with internal taper to hold specially formed specimen composed of filaments of refractory material provides means for holding at high temperature and under tension so that performance evaluations may be made.

B72-10029

ISOTROPIC PYROLYTIC CARBONS

H. Shimizu (Marquardt Co.)

1972

ARC-10532

Depositing carbon on high-temperature substrate that is kept in motion by vibration produces isotropic pyrolytic graphite or carbon without using fluidized beds.

B72-10038

USE OF THIN PLASTIC FILMS AT CRYOGENIC TEMPERATURES

R. F. Lark, J. T. Hoggatt (Boeing Co.), K. E. Wiedekamp (Boeing Co.), and J. G. Shdo (Boeing Co.)

1972 See also NASA-CR-54433; NASA-CR-72115;

NASA-CR-72134; ; NASA-CR-72418;; NASA-CR-72432;

NASA-CR-72502; NASA-TM-X-1555

LEWIS-11047

Commercially available plastic film materials that remain flexible at cryogenic temperatures and resist failures caused by folds and wrinkles created during expulsion were investigated for use in expulsion bladders for liquefied gases. Compatible adhesive systems, fabrication techniques, and results of impact and dynamic loading tests are summarized.

B72-10044

A METHOD OF ISOLATING ORGANIC COMPOUNDS PRESENT IN WATER

G. V. Calder, J. Fritz, and G. A. Junk

1972

AEC-10010

Water sample is passed through a column containing macroreticular resin, which absorbs only nonionic organic compounds. These compounds are selectively separated using aqueous eluents of varying pH, or completely exuded with small amount of an organic eluent.

B72-10063

OPTICAL BONDING AGENTS FOR SEVERE ENVIRONMENTS

S. F. Pellicori (Santa Barbara Res. Center)

1972

ARC-10459

Test results and applications of elastors (General Electric RTV 665, Dow Corning (DC) XR-63-488, DC 93-500, DC 182, and DC 184) considered for use as optical bonding agents in aerospace environments are presented.

B72-10090**SHEET PLASTIC FILTERS FOR SOLAR CELLS**

R. J. Wizenick (Electro-Opt. Systems)

1972

NPO-11464

Poly(vinylidene fluoride) (PVF) film protects solar cells on Mars surface from radiation and prevents degradation of solar cell surfaces by Martian dust storms. PVF films may replace glass or quartz windows on solar cell arrays used to generate power on earth.

B72-10115**PROMOTION OF DROPWISE CONDENSATION OF ETHYL ALCOHOL, METHYL ALCOHOL, AND ACETONE BY POLYTETRAFLUOROETHYLENE**

C. E. Kirby

1972

LANGLEY-10940

Coating condensing surfaces with thin layer of nonpolar Teflon results in dropwise condensation of polar organic vapor. Greater heat transfer coefficients are produced increasing effectiveness of condensing system. Investigation shows that vapors with strong dipole moment tend to condense dropwise.

B72-10129**PREVENTING OIL MIGRATION IN VACUUM SYSTEMS**

M. Cridlin

May 1972

GSFC-11253

Method which uses a disposable metal gasket that is removed when system is deactivated eliminates oil migration from mechanical pump to other areas of the system.

B72-10136**LUBRICANT SELECTION FOR GEAR DESIGNERS**

D. P. Townsend

1972 See also NASA-TM-X-52942

LEWIS-11483

Guide for gear designers, consisting of theory, calculations, charts, curves and references, explains lubrication requirements for gears to insure maximum performance. Mechanical and service variables are considered in order to obtain optimum gear performance under severe operating conditions.

B72-10137**CARBON MONOXIDE OXIDATION RATES COMPUTED FOR AUTOMOBILE THERMAL REACTOR CONDITIONS**

R. S. Brokaw and D. A. Bittker

May 1972 See also NASA-TN-D-7024

LEWIS-11638

Carbon monoxide oxidation rates in thermal reactors for exhaust manifolds are computed by integrating differential equations for system of twenty-nine reversible chemical reactions. Reactors are noncatalytic replacements for conventional exhaust manifolds and are a system for reducing carbon monoxide and hydrocarbons in automobile exhausts.

B72-10144**AN EMPIRICAL RELATIONSHIP FOR THE PENETRATION OF 1 TO 3 MeV ELECTRONS**

F. R. Stevenson

May 1972

LEWIS-11495

Empirical correlation of high energy electrons into materials allows predictions of practical ranges (measure of electron penetration) for different elements and alloys.

B72-10150**ADVANCED PROTECTIVE COATING FOR SUPERALLOYS**

R. C. Elam (Pratt and Whitney), F. P. Talboom (Pratt and Whitney), and L. W. Wilson (Pratt and Whitney)

Dec. 1972 See also NASA-CR-72813

LEWIS-11473

Superior oxidation protection for nickel-base alloys at temperatures up to 1367 K was obtained with cobalt-base alloy coating. Coating had 25 Cr, 14 Al, and 0.5 Y weight percent composition. Coating was applied by electron beam vapor deposition to thickness of 76 to 127 microns.

B72-10157**NONDESTRUCTIVE-TEST STANDARDS FOR EVALUATION OF FIBER-REINFORCED COMPOSITES**

W. M. Pless (Lockheed-Ga. Co.), B. L. Weil (Lockheed-Ga. Co.), W. H. Lewis (Lockheed-Ga. Co.), and G. W. Burton (Lockheed-Ga. Co.)

May 1972

M-FS-21288

Advanced composite standards, representing potential variations occurring when composites are processed into finished structures, were designed, fabricated and tested. Testing methods utilized were ultrasonic C-scan, radiography, and infrared.

B72-10161**HALOGENATION OF MICROCAPSULE WALLS**

T. R. Davis (Natl. Cash Register Co.), C. K. Schaab (Natl. Cash Register Co.), and J. C. Scott (Natl. Cash Register Co.)

1972

ARC-10410

Procedure for halogenation of confining walls of both gelatin and gelatin-phenolic resin capsules is similar to that used for microencapsulation. Ten percent halogen content renders capsule wall nonburning; any higher content enhances flame-retardant properties of selected internal phase material. Halogenation decreases permeability of wall material to encapsulated materials.

B72-10172**IMPROVED SYNTHESIS OF INTERMETAL COMPOUNDS**

J. S. Haggerty (Little /Arthur D./, Inc.) and J. Wenckus (Little /Arthur D./, Inc.)

May 1972

HQ-10690

Method in crystal growth using liquid encapsulation techniques permits GaAs synthesis of materials from constituent elements whose vapor pressures are high at temperature at which they react spontaneously. Techniques may be useful for synthesis of GaP.

B72-10175**NEW POLYIMIDE POLYMER HAS EXCELLENT PROCESSING CHARACTERISTICS WITH IMPROVED THERMO-OXIDATIVE AND HYDROLYTIC STABILITIES**

R. J. Jones (TRW, Inc.), R. W. Vaughan (TRW, Inc.), and W. P. Kendrick (TRW, Inc.)

May 1972 See also B69-10118; B70-10300; B70-10330; NASA-CR-72633

LEWIS-11323

Polyimide P10P and its processing technique apply to most high temperature plastic products, devices and castings. Prepolymer, when used as varnish, impregnates fibers directly and is able to be processed into advanced composites. Material may also be used as molding powder and adhesive.

B72-10187**SUPERIOR CRYOGENIC INSULATION DEVELOPED**

D. V. Hale (Lockheed Missiles and Space Co.), M. J. O'Neill (Lockheed Missiles and Space Co.), and A. J. McDaniel (Lockheed Missiles and Space Co.)

May 1972

M-FS-21560

Multilayer composite consisting of alternate spunbond nylon layers and doubly aluminized mylar layers is used primarily in cryogenic thermal protection systems.

B72-10199**HIGH-TEMPERATURE CERAMIC-TO-CERAMIC SEALS**

W. Smart (Appl. Electrochem., Inc.)

May 1972 See also NASA-CR-73464

ARC-10319

Noble-metal braze applied to appropriately prepared zirconia parts produces a gas-tight, durable seal that can withstand temperature of 825 C for over 2000 hours without deterioration.

B72-10201

COMPARISON OF CATALYST ACTIVITY

T. J. Jennings (Shell Develop. Co.) and H. H. Voge (Shell Develop. Co.)

May 1972

ARC-10493

Reactions of highly active catalysts are compared by allowing temperature of catalyst bed, initially at 77 K, to increase slowly; marked deviation in smooth warming curve denotes temperature at which detectable reaction occurs. The lower the temperature at which reaction commences, the more active the catalyst.

B72-10215

CONVOLUTED FABRIC FOR FULL-PRESSURE GLOVES

W. Elkins (Space Age Control, Inc.), C. Breslin (Space Age Control, Inc.), and H. Price (Space Age Control, Inc.)

May 1972 See also NASA-CR-114365

ARC-10529

Fabric, made of nylon ripstop coated with Neoprene, provides expansive and contractive mobility along posterior surface of glove fingers allowing maximum digital dexterity and tactility.

B72-10223

INITIATION OF POLYMERIZATION BY TETRABUTYLAMMONIUM p-LITHIOPHENOXIDE

S. M. Hirshfield (Rocketdyne)

1972 See also B72-10184

ARC-10553

Compound is an efficient initiator capable of producing a polymer with a phenol group at the initiating end of the chain. Derivative may be used as a polymerization initiator to produce large quantities of phenol-terminated polymers.

B72-10230

WATER PURIFICATION BY REVERSE OSMOSIS USING HETEROCYCLIC POLYMER MEMBRANES

H. Scott (Franklin Inst. Res. Labs.)

May 1972 See also NASA-CR-1648

LANGLEY-10514

Pyrrone (polyimidazopyrrolone) polymers are a new class of thermally stable, radiation and chemical resistant aromatic-heterocyclic polymers featuring a greater chemical and mechanical durability than cellulose acetate.

B72-10231

ADHESION THEORY REVIEW

N. J. DeLolliis

May 1972 See also SC-RR-70-915

AEC-10083

Bonding theories reviewed include physical adsorption, hydrogen bonding, chemisorption and surface energy; bond failure mechanisms include phase discontinuity, swelling and corrosion. Concept of bond failure by water desorption is introduced and discussed.

B72-10234

IMPROVED METHOD FOR PRODUCING METAL-REINFORCED CERAMICS

R. L. Landingham

May 1972

AEC-10070

Vacuum impregnation process produces metal-reinforced ceramics with only 3 percent void space volumes. Method may be used to produce metal-reinforced ceramics for high temperature or structural applications such as furnace supports and armor.

B72-10235

HIGH STRENGTH, MEDIUM DENSITY MOLDED FOAM

J. R. Fender (Bendix Corp.)

May 1972

AEC-10053

Toluene diisocyanate-based polyurethane produces molded-to-size foam products. Formulation techniques optimize dimension stability, strength and moldability.

B72-10247

INSOLUBILIZED ENZYMES FOR FOOD SYNTHESIS

D. L. Marshall (Battelle Mem. Inst.)

Sep. 1972

ARC-10568

Cellulose matrix with numerous enzyme-coated silica particles of colloidal size permanently bound at various sites within matrix was produced that has high activity and possesses requisite physical characteristics for filtration or column operations. Product also allows coupling step in synthesis of edible food to proceed under mild conditions.

B72-10249

OXYGEN CARRIER FOR GAS CHROMATOGRAPHIC ANALYSIS OF INERT GASES IN PROPELLANTS

W. A. Cannon (McDonnell-Douglas Corp.)

Sep. 1972 See also NASA-CR-97860

ARC-10574

Gas chromatographic determination of small quantities of inert gases in reactive propellants is discussed. Operating conditions used for specific analyses of helium in diborane and nitrogen in oxygen difluoride are presented in tabular form.

B72-10256

A PROTECTIVE COATING FOR STAINLESS STEEL

S. J. Grisaffe and E. W. Klechka

May 1972 See also NASA-TM-X-2201

LEWIS-11267

Comparative furnace oxidation tests prove that coating provides high temperature oxidation and erosion resistance.

B72-10257

POLYMERIC COATINGS USING ELECTRONIC EXCITATION

S. M. Lee (N. Am. Rockwell Corp.)

Jun. 1972

HQ-10698

Process has been developed for glow discharge polymerization which is accomplished in inert atmosphere by using vacuum chamber. Polymeric coating, in this type of environment, produces high molecular weight coating polymers that have good stability and are resistant to abrasions and solvents.

B72-10262

DEVELOPMENT OF A POLYIMIDE FOR USE AS A TEMPERATURE AND SOLVENT RESISTANT SEALANT

J. S. Roscoe (Quantum, Inc.) and B. F. Clark (Quantum, Inc.)

Jul. 1972

M-FS-21325

Polyimide developed by the interaction of benzophenone tetracarboxylic dianhydride, polyoxypropylene diamine, and oxydianiline is used for fuel tanks that are exposed to extreme temperatures.

B72-10266

COMPOSITE CASTING DEMONSTRATION

Innovator not given (Little /Arthur D./, Inc.) Jun. 1972

M-FS-21668

Demonstration was performed to experimentally assess the potential advantages in the processing of materials in space, and specifically, to determine the effects of lack of density segregation and heat convection in the weightless environment of space.

B72-10269

FIRE RETARDANT POLYISOCYANURATE FOAM

S. R. Riccitiello and J. A. Parker

1972

ARC-10280

Fire retardant properties of low density polymer foam are increased. Foam has pendant nitrile groups which form thermally-stable heterocyclic structures at temperature below degradation temperature of urethane linkages.

B72-10280

DEVOLATILIZATION OF POLYMER RESINS

B. Seidenberg, J. Park, and C. Clatterbuck

Jun. 1972

GSFC-11358

Commercial silicon resin was devolatilized by vacuum distillation, cured at room temperature and tested favorably for outgassing criteria. Applications of the devolatilized resin are potting compounds and conformal coatings.

B72-10282

NEW TWISTED INTERMETALLIC COMPOUND SUPERCONDUCTOR: A CONCEPT

W. D. Coles, G. V. Brown, and J. C. Laurence

Jun. 1972

LEWIS-11015

Method for processing Nb₃Sn and other intermetallic compound superconductors produces a twisted, stabilized wire or tube which can be used to wind electromagnetics, armatures, rotors, and field windings for motors and generators as well as other magnetic devices.

B72-10284

A NEW VIBRATION DAMPENING ADHESIVE

S. Y. Yoshino (N. Am. Rockwell Corp.)

Jul. 1972

MSC-17668

Formulation of polymers has been devised that, when vibrated, adhesive becomes more fluid (thixotropic) to better absorb shock and, when warmed, will actually hold its shape better (thermosetting) rather than deform.

B72-10290

HIGH VOLTAGE ELECTRICAL INSULATION COATING FOR REFRACTORY MATERIALS

W. E. Lent (Hughes Aircraft Co.)

Jun. 1972 See also NASA-CR-72677

LEWIS-11479

Formula and process have been developed for coating refractory metal surfaces with high voltage electrical insulation for use at temperatures to 600 C. Coatings were specifically developed as an insulation for the surface of a perforated, molybdenum, ion-accelerator grid, but are not limited to this application.

B72-10291

IMPROVED THERMALLY CONDUCTING ELECTRON TRANSFER POLYMERS

R. K. Jenkins (McDonnell-Douglas Corp.), N. R. Byrd (McDonnell-Douglas Corp.), and J. L. Lister (McDonnell-Douglas Corp.)

Jun. 1972

GSFC-11304

Development of polymers with improved heat transfer coefficients for use in encapsulating electronic modules is discussed. Chemical reactions for synthesizing the polymers are described and thermodynamic and physical properties are analyzed.

B72-10294

GRAPHITE AND BORON-REINFORCED COMPOSITE MATERIALS DATA SUMMARY

Innovator not given (Gen. Dyn. Corp.) Jun. 1972

M-FS-21691

Data summary is collection of information on typical processing techniques. Mechanical properties, and physical properties of advanced composite materials which are being considered for structural applications on advanced space vehicles.

B72-10300

POLYIMIDE FOAMS PROVIDE THERMAL INSULATION AND FIRE PROTECTION

R. W. Rosser

Sep. 1972

ARC-10464

Chemical reactions to produce polyimide foams for application as thermal insulation and fire prevention materials are discussed. Thermal and physical properties of the polyimides are described. Methods for improving basic formulations to produce desired qualities are included.

B72-10305

CATALYST FOR SODIUM CHLORATE DECOMPOSITION

T. J. Wydeven

Sep. 1972

ARC-10584

Production of oxygen by rapid decomposition of cobalt oxide and sodium chlorate mixture is discussed. Cobalt oxide serves as catalyst to accelerate reaction. Temperature conditions and chemical processes involved are described.

B72-10306

MICROMINIATURE GAS CHROMATOGRAPHIC COLUMN

R. W. Donaldson, Jr.

Sep. 1972

ARC-10594

Techniques commonly used for fabrication of integrated circuits are utilized to produce long capillary tubes for microminiature chromatographs. Method involves bonding of flat silicon plate to top of spirally grooved silicon chip to close groove and form capillary column.

B72-10309

STABILIZATION OF POROUS GLASS REVERSE-OSMOSIS MEMBRANES

E. V. Ballou, M. I. Leban, and T. Wydeven

Sep. 1972

ARC-10646

Application of porous glass in form of capillary tubes for low capacity ion exchange in hyperfiltration experiments is discussed. Efficiency of desalination by process of reverse osmosis is described. Stabilization of porous glass membrane by presence of aluminum chloride is analyzed.

B72-10313

INORGANIC GLASS CERAMIC SLIP RINGS

E. W. Glossbrenner (Litton Precision Products, Inc.) and S. R. Cole (Litton Precision Products, Inc.)

Jun. 1972

M-FS-20711

Prototypes of slip rings have been fabricated from ceramic glass, a material which is highly resistant to deterioration due to high temperature. Slip ring assemblies were not structurally damaged by mechanical tests and performed satisfactorily for 200 hours.

B72-10318

MAGNETIC-DOPED ALLOYS WITH VERY LARGE SEEBECK COEFFICIENTS

D. J. Sellmeyer (MIT) and J. Zagarins (MIT)

Jul. 1972

M-FS-21410

Preliminary results of this study show that, based on selection of magnetic solute and nonmagnetic solvent from periodic table, alloys having Seebeck coefficients approaching 100 micron V/K can be obtained.

B72-10320

PLASMA CALCINING OF PIGMENT PARTICLES FOR THERMAL CONTROL COATINGS

E. P. Farley (Stanford Res. Inst.)

Jul. 1972

M-FS-21267

Method utilizes an RF excited plasma to surface deactivate thermally stable powders at high temperatures. Utilization of this plasma heat treatment at high temperatures can be carried out without grain growth, calcination, or agglomeration.

B72-10321

TITANIUM ALLOY STRESS CORROSION CRACKING IN PRESENCE OF DINITROGEN TETROXIDE

A. Z. Conner (Hercules, Inc.), J. F. G. Clarke, Jr. (Hercules, Inc.), J. A. Gailey (Hercules, Inc.), and A. A. Orr (Hercules, Inc.)

Jul. 1972

M-FS-21113

Study resulting in a satisfactory stress corrosion cracking test with extremely consistent results produced six new analytical methods. Methods detect and determine differences in the minor constituent composition of different types of dinitrogen tetroxide.

B72-10328**TRACE CONTAMINANT ADSORPTION AND SORBENT REGENERATION IN CLOSED ECOLOGICAL SYSTEMS**

C. R. Arnold (Lockheed Missiles and Space Co.), G. J. Kersels (Lockheed Missiles and Space Co.), R. P. Merrill (Lockheed Missiles and Space Co.), A. J. Robell (Lockheed Missiles and Space Co.), and A. Wheeler (Lockheed Missiles and Space Co.)
Dec. 1972 See also NASA-CR-1582

LANGLEY-10681

Correlation was obtained for determining sorptive capacity of carbon for pure and mixed contaminants under dry and humid conditions at various temperatures. Vacuum desorption rates were investigated for single particles and for sorbent beds. For sorbent beds, rate-determining step is Knudsen diffusion through interparticle voids.

B72-10333**ANALYSIS OF THERMAL STRESS AND METAL MOVEMENT DURING WELDING**

J. B. Andrews (MIT) and K. Masubuchi (MIT)

Jul. 1972

M-FS-20984

Objectives of study were: investigation of temperature changes caused by welding arc with analysis of temperature distribution; development of system of mathematical statements describing thermal stresses and plastic strains during welding; and development of system of mathematical solutions and computer programs for one-dimensional analysis.

B72-10336**STUDY OF IN-SITU DEGRADATION OF THERMAL CONTROL SURFACES**

J. E. Gilligan (IIT Res. Inst.) and G. A. Zerlaut (IIT Res. Inst.)

Jul. 1972

M-FS-20892

Experimental technique used in study of damage mechanism to semiconductor pigments exposed to ultraviolet radiation can be adapted for investigations of surface chemistry and may be used analytically to determine contamination.

B72-10337**NONFLAMMABLE POTTING, ENCAPSULATING AND/OR CONFORMAL COATING COMPOUND**

H. F. Kline and F. Dawn

Jul. 1972

MSC-13499

Compound formed from dimethylpolysiloxane, ammonium phosphate, and ground glass is nonflammable in air environment and self-extinguishing in atmosphere of 60 percent oxygen and 40 percent nitrogen. Material may have applications for reducing industrial fire hazards and should interest aircraft industry, machinery manufacturers, and automotive industry.

B72-10339**STRAIN GAGE ATTACHMENT BY SPOT WELDING REDUCES THE FATIGUE STRENGTH OF Ti-6Al-4V, RENE 41, AND INCONEL X**

L. A. Imig

Jul. 1972

LANGLEY-10930

Fatigue tests were conducted with constant-amplitude axial stresses in the ratio of minimum to maximum stress of 0.05 (R=0.05). Specimens with and without strain gages were tested at 21 C, and superalloy specimens with and without strain gages were tested at 21 C and 815 C.

B72-10340**FABRICATION OF UNIAXIAL FILAMENT-REINFORCED EPOXY TUBES FOR STRUCTURAL APPLICATION**

J. G. Davis, Jr.

Jul. 1972

LANGLEY-10203

Filament reinforced composite materials have high strength, high stiffness and low density. Tubes fabricated from process described have advantages of having smooth inner and outer surfaces, lower dimensional variation than tolerances set for extruded aluminum tubing and void free composites.

B72-10342**SYNTHESIS OF TEMPERATURE AND SOLVENT-RESISTANT POLYMERS**

J. A. Webster (Monsanto Res. Corp.), W. J. Patterson, R. L. Moffett, and D. E. Morris

Jul. 1972

M-FS-20848; M-FS-20979; M-FS-21039

Development of silicone polymers, polyimides, and polyisocyanurates for use as insulation, coatings, or adhesives under adverse environmental conditions is discussed. Chemical structure of the organic compounds is presented. Physical and mechanical properties of the compounds are analyzed.

B72-10343**A PERMEABLE ROTATING-WHEEL SOLVENT EXTRACTOR**

D. R. Kahn and L. A. Nady

Dec. 1972

LRL-10033

Column-type device reported employs circular permeable structures of wire mesh screen for extracting solvents from systems with low density differences and low interfacial tensions. Rotating screen wheels of structure fasten to shaft; stationary screen structures are supported by circular bands connected by radial metal arms.

B72-10344**HIGH STRENGTH ALLOY FOR IMMEDIATE TEMPERATURE, 24 TO 704 C (75 TO 1300 F), APPLICATIONS**

J. C. Freche, R. L. Ashbrook, and W. J. Waters

Jul. 1972 See also NASA-TN-D-6560

LEWIS-11634

Application of prealloyed powder technology to the NASA-TRW-VI-A alloy shows the potential of highly alloyed normally cast superalloys for achieving superior properties at intermediate temperatures.

B72-10346**ADHESIVE FOR ALUMINUM WITHSTANDS CRYOGENIC TEMPERATURES**

W. L. Hill (N. Am. Rockwell Corp.), T. Matsuoka (Hj Am. Rockwell Corp.), and J. C. Helf (N. Am. Rockwell Corp.)

Jul. 1972

M-FS-16848

Polyurethane adhesive mixed to various proportions with milled glass fibers match the thermal characteristics of 2014-T6 aluminum at cryogenic temperatures.

B72-10353**TITANIUM REINFORCED BORON POLYIMIDE COMPOSITE**

G. A. Clark (N. Am. Rockwell Corp.)

Jul. 1972

M-FS-21916

Program involves development of process technique for boron-polyimide prepreg, lay-up and curing procedures for prepegs when processed under vacuum bag pressure, and development and evaluation of titanium hard points for smooth transition of loads from titanium attach points into boron reinforced body of structure.

B72-10358**THERMALLY RESISTANT POLYMERS FOR FUEL TANK SEALANTS**

J. A. Webster (Monsanto Res. Corp.)

Jul. 1972

M-FS-21232

Conversion of fluorocarbon dicarboxylic acid to intermediates whose terminal functional groups permit polymerization is discussed. Resulting polymers are used as fuel tank sealers for jet fuels at elevated temperatures. Stability and fuel resistance of the prototype polymers is explained.

B72-10364**FAILURE IN GLASS**

S. C. Keeton

Jun. 1972 See also SCL-RR-710010

AEC-10088

Review of state of the art concerning glass failure mechanisms and fatigue theories discusses brittle fracture in glass, fatigue mechanisms, fatigue behavior, environmental effects on failure rate, and aging.

**B72-10365
EVALUATING FOAM HETEROGENEITY**

D. W. Liou (Dow Chem. Co.) and W. M. Lee (Dow Chem. Co.)
Jun. 1972 See also BDX-613-229

AEC-10046

New analytical tool is available to calculate the degree of foam heterogeneity based on the measurement of gas diffusivity values. Diffusion characteristics of plastic foam are described by a system of differential equations based on conventional diffusion theory. This approach saves research and computation time in studying mass or heat diffusion problems.

**B72-10366
POLYMERIC BINDER FOR EXPLOSIVES**

E. R. Bissell
Jun. 1972

AEC-10062

Chemical reaction for producing a polymer which can be mixed with explosives to produce a rigid material is discussed. Physical and chemical properties of polymers are described and chemical structure of the polymer is illustrated.

**B72-10367
BONDABILITY OF RTV SILICON RUBBER**

N. J. Delollis and O. Montoya
Jun. 1972

AEC-10026

Glow discharge method for producing a bondable Room Temperature Vulcanizing (RTV) silicone is described. Mechanical and chemical properties of silicone specimens are described. Theory concerning the relationship between surface characteristics and bondability is examined with respect to the polymer specimen.

**B72-10378
DISPERSION-STRENGTHENED CHROMIUM ALLOY**

J. M. Blocker, Jr. (Battelle Mem. Inst.) and N. D. Veigel (Battelle Mem. Inst.)

Dec. 1972 See also NASA-CR-72404; NASA-CR-72901

LEWIS-10982

Finely divided powder mixture produced by vapor deposition of CR on small ThO₂ particles was hot pressed or pressure bonded. Resulting alloy has lower ductile-to-brittle transition temperature than pure chromium, and high strength and oxidation resistance at elevated temperatures, both in as-rolled condition and after annealing.

**B72-10382
COMMON BEARING MATERIAL HAS HIGHEST FATIGUE LIFE AT MODERATE TEMPERATURE**

R. J. Parker, E. V. Zaretsky, and M. W. Dietrich
Jul. 1972 See also NASA-TN-D-6179; NASA-TN-D-7033

LEWIS-11592

AISI 52100, a high carbon chromium steel, has the longest fatigue life of eight bearing materials tested. Fatigue lives of the other materials ranged from 7 to 78 percent of the fatigue life of AISI 52100 at a temperature of 340 K (150 F).

**B72-10386
BORON ALUMINUM COMPOSITE STRUCTURES**

R. E. Jackson (McDonnell-Douglas Corp.)
Jul. 1972

M-FS-21571

Design, analysis and fabrication techniques have been developed for boron-aluminum composite structure technology and were compared with those of conventional metal structure technology to evaluate relative performance.

**B72-10396
METHOD TO DETERMINE VENTED ELECTROCHEMICAL CELL QUALITY**

J. T. Stemmler
Jul. 1972

GSFC-11216

Cell mass is measured periodically or monitored continuously by balances and clocks to determine water loss and rate of mass loss during trickle charge period.

**B72-10397
ION PLATING SEALS MICROCRACKS OR POROUS METAL COMPONENTS**

T. Spalvins, D. H. Buckley, and W. A. Brainard
Jul. 1972 See also B67-10006

LEWIS-11657

Description of ion plating process is given. Advantage of this process is that any plating metal or alloy can be selected, whereas, for conventional welding, material selection is limited by compatibility.

**B72-10401
DEFLECTION RESISTANCE INDICATOR**

H. S. Massey (N. Am. Rockwell Corp.), H. L. Pontious (N. Am. Rockwell Corp.), and W. M. Zinsley (N. Am. Rockwell Corp.)
Dec. 1972

M-FS-24010

Instrument for nondestructively measuring compression resistance of spray foam used as thermal insulation was developed. Cylindrical indicator has probe with coil spring to provide force and indicating dial. Probe is manually pressed against area to be tested until complete foot area contacts foam surfaces.

**B72-10406
INSULATING EFFECTIVENESS OF SELF-SPACING DIMPLED FOIL**

J. A. Bond (GE)
Dec. 1972

LEWIS-10941

Experimental data are graphed for determining conductive heat losses of multilayer insulation as function of number of foil layers. Foil was 0.0051 cm thick Nb, 1% Zr refractory alloy, dimpled to 0.0254 cm with approximately 28 dimples/sq cm. Heat losses were determined at 0.1 microtorr between 700 and 1089 K.

**B72-10412
PURIFICATION OF CONTAMINATED WATER BY FILTRATION THROUGH POROUS GLASS**

T. Wydeven and M. I. Leban
Sep. 1972

ARC-10655

Method for purifying water that is contaminated with mineral salts and soluble organic compounds is described. Method consists of high pressure filtration of contaminated water through stabilized porous glass membranes. Procedure for conducting filtration is described. Types of materials by percentage amounts removed from the water are identified.

**B72-10413
RAPID EVALUATION OF REVERSE-OSMOSIS MEMBRANES**

J. R. Hollahan and T. Wydeven
Sep. 1972

ARC-10659

Simultaneous reverse-osmosis tests conducted with centrifuges having multiple compartment heads are discussed. Equipment for retaining reverse-osmosis membrane is illustrated. Method of conducting tests is described.

**B72-10416
ELECTROMAGNETIC RHEOMETER**

R. H. Globus (Aerojet Liquid Rocket Co.) and J. A. Cabeal (Aerojet Liquid Rocket Co.)
Aug. 1972 See also B72-10026

ARC-10525

Force required to pull free a small circular plate imbedded in gel liquid is determined. Procedure for measuring the structure of a gel is given.

**B72-10418
TECHNIQUE FOR INCREASING YIELD OF TRIFLUORONITROSOMETHANE-TETRAFLUOROETHYLENE COPOLYMER**

S. A. Glickman (Thiokol Chem. Corp.)

Aug. 1972

ARC-10566

Polymerization technique using equimolar amounts of trifluoronitrosomethane and tetrafluoroethylene to increase yield of copolymer is described. Yields were increased by ninety percent and final product displayed better physical properties. Test equipment and chemical reactions for process are described.

B72-10419

FREE-RADICAL SOLUTION-POLYMERIZATION OF TRI-FLUORONITROSOMETHANE WITH TETRAFLUORO-ETHYLENE

S. A. Glickman (Thiokol Chem. Corp.)

Aug. 1972

ARC-10567

Heavy-walled glass reactor, equipped with aerosol-compatible couplings and needle valve and charged with solvent and initiator, is utilized for polymerization. Polymer conversions and reactor/vessel operation are discussed.

B72-10420

REGENERABLE METALLIC OXIDE SYSTEMS FOR REMOVAL OF CARBON DIOXIDE: A CONCEPT

J. G. Sutton (Hamilton Std.), P. F. Heimlich (Hamilton Std.), and E. H. Tepper (Hamilton Std.)

Aug. 1972

ARC-10570

Design concepts for portable canisters for removal of carbon dioxide are described. One is screen pack configuration consisting of brazed rectangular canister with four metal oxide packs inserted. Other is radial flow canister with perforated central tube. Methods of production and operating principles are presented.

B72-10421

SOLID AMINE COMPOUNDS AS SORBENTS FOR CARBON DIOXIDE: A CONCEPT

J. G. Sutton (Hamilton Std.), P. F. Heimlich (Hamilton Std.), and E. H. Tepper (Hamilton Std.)

Aug. 1972

ARC-10571

Solid amine compounds were examined as possible absorbents for removal of carbon dioxide in life support systems of type which may be employed in high altitude aircraft, spacecraft, or submarines. Many solid amine compounds release absorbed carbon dioxide when heated in vacuum, therefore, when properly packaged spent amine compounds can be readily regenerated and put back into service.

B72-10422

PHOSPHONIUM CHLORIDE FOR THERMAL STORAGE

J. G. Sutton (Hamilton Std.), P. F. Heimlich (Hamilton Std.), and E. H. Tepper (Hamilton Std.)

Aug. 1972

ARC-10572

Development of systems for storage of thermal energy is discussed. Application of phosphonium chloride for heat storage through reversible dissociation is described. Chemical, physical, and thermodynamic properties of phosphonium chloride are analyzed and dangers in using phosphonium chloride are explained.

B72-10423

FABRICATION OF CARBON FILM COMPOSITES FOR HIGH-STRENGTH STRUCTURES

P. R. Preiswerk (Astro Res. Corp.) and M. Lippman (Astro Res. Corp.)

Aug. 1972 See also NASA-CR-1972

ARC-10613

Physical and mechanical properties of fiber composite materials consisting of carbon films are described. Application of carbon film structural composites for constructing microwave filters or optical instruments is proposed. Applications in aerospace and architectural structures for high strength and low density properties are discussed.

B72-10424

IMPROVED MAGNESIA FOR THERMAL CONTROL COATINGS

H. Levin (Hughes Aircraft Co.), C. C. Berggren (Hughes Aircraft Co.), and W. M. Peffley (Hughes Aircraft Co.)

Aug. 1972 See also NASA-CR-73337

ARC-10677

Formation of radiation-generated color centers using single crystals of magnesium oxide is discussed. Crystal structure of magnesium oxide is described. Chemical processes used to produce magnesium oxide with desired color center kinetics are presented. Proton irradiation of magnesium oxide crystals was conducted to determine lattice defects.

B72-10425

ALUMINUM NITRIDE INSULATING FILMS FOR MOSFET DEVICES

G. W. Lewicki and J. Maserjian

Aug. 1972

NPO-11859

Application of aluminum nitrides as electrical insulator for electric capacitors is discussed. Electrical properties of aluminum nitrides are analyzed and specific use with field effect transistors is defined. Operational limits of field effect transistors are developed.

B72-10430

STRENGTHENING LIGHTWEIGHT CONCRETE

A. Auskern

Jul. 1972

AEC-10017

Polymer absorption by lightweight concretes to improve bonding between cement and aggregate and to increase strength of cement is discussed. Compressive strength of treated cement is compared with strength of untreated product. Process for producing polymers is described.

B72-10431

FLUIDIZED-BED COMBUSTION REDUCES ATMOSPHERIC POLLUTANTS

A. A. Jonke

Dec. 1972

AEC-10085

Method of reducing sulfur and nitrogen oxides released during combustion of fossil fuels is described. Fuel is burned in fluidized bed of solids with simultaneous feeding of crushed or pulverized limestone to control emission. Process also offers high heat transfer rates and efficient contacting for gas-solid reactions.

B72-10438

PROPOSED SEMICONDUCTOR FILM IMPROVEMENT

H. M. Manasevit (N. Am. Aviation, Inc.)

Jul. 1972

HQ-10685

Film grown in inert carriers (A, He, or N) displays low impurity, high mobility, and improved crystal structure. Annealing steps used in growing process improves film quality and allows utilization of film for Gunn and LSA devices.

B72-10439

ELECTRON BEAM CHEMISTRY PRODUCES HIGH PURITY METALS

W. H. Philipp, C. E. May, S. J. Marsik, and R. A. Lad

Jul. 1972 See also NASA-TM-X-67982

LEWIS-11639

Application of radiation chemistry for deposition of metals by irradiation of aqueous solutions with high energy electrons is presented. Design of reaction vessel for irradiation of solution is illustrated. Features of radiochemical technique and procedures followed are described.

B72-10449

LEACHING OF NITROSO RUBBER MATERIAL REMOVES UNCURED POLYMER

W. A. Brattisch (N. Am. Rockwell Corp.) and R. Gonzalez (N. Am. Rockwell Corp.)

Aug. 1972

MSC-17185

New leaching process removes uncured polymer from nitroso rubber, elastomer used in presence of nitrogen tetroxide. Uncured portion is removed by controlled soaking of polymer slab in Freon TF. Leaching with Freon TF prevents nitroso rubber from adhering to adjoining surfaces and limiting its usefulness in either static or dynamic applications.

B72-10451**CHEMICAL MODIFICATION OF POLY(p-PHENYLENE) FOR USE IN ABLATIVE COMPOSITIONS**

J. A. Parker, A. H. Heimbuch, D. N. Vincent (N. Am. Rockwell Corp.), and C. L. Hammermesh (N. Am. Rockwell Corp.)
Aug. 1972

ARC-10135

Development of ablative materials based on modification of polyphenylene compounds is discussed. Chemical and physical properties are analyzed for application as heat resistant materials. Synthesis of linear polyphenylenes is described. Effects of exposure to oxyacetylene flame and composition of resultant char layer are presented.

B72-10454**NONMETALLIC IMPURITIES IMPROVE MECHANICAL PROPERTIES OF VAPOR-DEPOSITED TUNGSTEN**

J. Chin (Gulf Gen. Atomic), A. F. Weinberg (Gulf Gen. Atomic), and J. R. Lindgren (Gulf Gen. Atomic)
Aug. 1972 See also B67-10232; B71-10212

LEWIS-10800

Mechanical properties of vapor deposited tungsten are improved by selective incorporation of various nonmetallic impurities. Addition of trace quantities of carbon, nitrogen, or oxygen can significantly increase both low and high temperature yield strength without greatly affecting ductile-to-brittle transition temperature.

B72-10456**RADIATION-INDUCED NICKEL DEPOSITS**

S. J. Marsik and W. H. Philipp
Dec. 1972 See also NASA-SP-227

LEWIS-10965

Low cost, photographic process uses surface coating of nickel hypophosphite sensitive to X-rays and electron radiation. Exposed coated surface can be amplified to produce permanent visible image of wide tonal gradation in grays. Coating may be sodium, ammonium, or lithium hypophosphite or sodium phosphite, with nickel supplied in developer.

B72-10464**PHASE-CHANGE MATERIALS HANDBOOK**

D. V. Hale (Lockheed Missiles and Space Co.), M. J. Hoover (Lockheed Missiles and Space Co.), and M. J. O'Neill (Lockheed Missiles and Space Co.)

Aug. 1972

M-FS-22064

Handbook describes relationship between phase-change materials and more conventional thermal control techniques and discusses materials' space and terrestrial applications. Material properties of most promising phase-change materials and purposes and uses of metallic filler materials in phase-change material composites are provided.

B72-10469**RESEARCH ON BEARING LUBRICANTS FOR USE IN A HIGH VACUUM**

M. E. Campbell (Midwest Res. Inst.) and H. Hass (Midwest Res. Inst.)

Aug. 1972

M-FS-22119

Work, during the research program, was concentrated on lubricant development, gear lubrication and evaluation, providing coated test specimens, advising NASA contractors about solid lubrication specific applications, and investigation of new method of attaching lubricating solids to bearing surfaces by sputtering technique.

B72-10473**PROCESS FOR SYNTHESIZING AND FORMULATING CONDENSED RING POLYMERS**

C. T. Hughes (Avco Corp.) and R. J. McHenry (Avco Corp.)
Aug. 1972 See also NASA-CR-1633

LANGLEY-10423

Chemical process for forming low molecular weight, fully cyclized heteroaromatic prepolymers under conditions which limit chain extension or branching is described. Exact procedures used in conducting chemical reaction are defined. Advantages of process over conventional methods are presented.

B72-10491**FLOATING ZONE PROCESS FOR DRAWING SMALL DIAMETER FIBERS OF REFRACTORY MATERIALS**

L. J. Westfall (Little /Arthur D./, Inc.), J. Haggerty, W. P. Menashi (Little /Arthur D./, Inc.), and J. F. Wenckus (Little /Arthur D./, Inc.)

Aug. 1972 See also NASA-CR-72811

LEWIS-11380

New process produces controlled purity, very high strength, single crystal fibers of materials with melting points to 4000 C. Process has been used to make single crystal fibers of highly refractory ceramics such as aluminum oxide, titanium carbide and yttrium oxide.

B72-10493**FUNCTIONALLY TERMINATED LIQUID NITROSO FLUOROCARBON TERPOLYMERS**

N. Mayes (Thiokol Chem. Corp.) and A. Marcellis (Thiokol Chem. Corp.)

Aug. 1972

M-FS-21539

Properties of polymer for conformal coating for electronic circuitry are described. Nitroso fluorocarbon polymers were selected for application. Chemical reactions for production of polymers are discussed. Technique allows regulation of crosslink densities, molecular weight, and viscosity.

B72-10503**EQUATIONS TO ASSESS THE IMPACT RESISTANCE OF FIBER COMPOSITES**

C. C. Chamis, M. P. Hanson, and T. T. Serafini

Aug. 1972 See also NASA-TM-X-67802; NASA-TN-D-64643

LEWIS-11486

Numerical analysis of impact resistance of composite materials containing fibers is discussed. Mathematical model of longitudinal impact resistance is presented. Potential impact resistance of various fiber composites as obtained by numerical analysis is presented as plotted curve.

B72-10511**IMPROVED METHOD FOR RECLAIMING VACUUM DIFFUSION PUMP OIL**

A. E. Buggele and R. K. Lohwater (Bendix Corp.)

Aug. 1972

LEWIS-11647

High vacuum centrifugal molecular distillation system rapidly reclaims contaminated diffusion pump oil in continuous operation and restores it to high level of purity.

B72-10514**ADVANCED ALLOY DESIGN TECHNIQUE: HIGH TEMPERATURE COBALT BASE SUPERALLOY**

R. L. Dreshfield, J. C. Freche, and G. D. Sandrock

Aug. 1972 See also NASA-TN-D-6147

LEWIS-10436

Advanced alloy design technique was developed for treating alloys that will have extended life in service at high temperature and intermediate temperatures. Process stabilizes microstructure of the alloy by designing it so that compound identified with embrittlement is eliminated or minimized. Design process is being used to develop both nickel and cobalt-base superalloys.

B72-10515**THERMOCOUPLE TAPE**

G. A. Mazaris, Jr. and R. D. Thomas

Dec. 1972 See also N71-31123

LEWIS-11072

Preformed, low cost, thin film thermocouples on adhesive tapes were fabricated. Metal strips of two dissimilar metals were laid on opposite edges of plastic substrate so that they overlap in center portion, forming thermocouple junction. Useful temperature range for polyimide films was 4 to 673 K.

B72-10517**HUMIDITY RESISTANT SOLAR CELL CONTACTS**

C. J. Bishop (Boeing Co.)

Aug. 1972

HQ-10674

Gold-platinum solar cell contact is developed which does not exhibit chemical reactivity of titanium or porosity of silver. This contact offers excellent ohmic characteristics and stability in humid air.

B72-10519**SINTERED DIAMOND COMPACTS USING METALLIC COBALT BINDERS**

W. F. Libby (Calif. Univ.) and H. Katzman (Calif. Univ.)

Aug. 1972

HQ-10706

Method is developed for sintering diamond powder which uses metallic cobalt as binder. Present samples show maximum microhardness of over 3000 kg/sq mm on Knoop scale. Material may be used as hard surface coating or may compete with cubic boron nitride as abrasive grain.

B72-10529**PREPARATION OF STABLE COLLOIDAL DISPERSIONS IN FLUORINATED LIQUIDS**

R. Kaiser (Avco Corp.)

Aug. 1972

HQ-10580

Chemical method for separating oil from water by liquid barrier which can be positioned magnetically is described. Fluorocarbon liquids containing colloidal suspension of magnetite is proposed. Chemical composition of magnetite and fluorinated ether polymer are presented.

B72-10544**AN IMPROVED GAS EXTRACTION FURNACE**

R. B. Wilkin (Brown and Root/Northrop)

Sep. 1972

MSC-14138

Design of glass furnace for analysis of rocks to determine nature and amount of trapped gas is described. Furnace heats specimen in vacuum conditions by radio frequency induction. Diagram of apparatus to show construction and operation is provided.

B72-10550**IMMOBILIZED PHOSPHORYLASE FOR SYNTHESIS OF POLYSACCHARIDES FROM GLUCOSE**

D. L. Marshall (Battelle Mem. Inst.)

Sep. 1972

ARC-10680

Continuous processes for enzymatic production of carbohydrates from glucose are discussed. Key reactant in process is identified as phosphorylase which catalyzes reversible formation or degradation of polysaccharide. Chemical compounds and reactions to synthesize polysaccharides are analyzed.

B72-10551**PTFE FILMS WITH IMPROVED FLEXIBILITY**

R. F. Muraca (Stanford Res. Inst.) and A. A. Koch (Stanford Res. Inst.)

Oct. 1972 See also B72-10552

NPO-12028

Development and application of flexible polytetrafluoroethylene films for expulsion bladders in spacecraft propellant tanks are described. Flexibility of material is obtained by reducing crystallinity

through annealing and quenching in water. Physical and mechanical properties of material are presented.

B72-10553**NEW TYPE OF TRIFUNCTIONAL ALCOHOL**

H. E. Marsh, Jr. and J. J. Hutchison

Sep. 1972

NPO-10714

New type of trifunctional alcohol was synthesized from commercially available trimer acid. Trifunctional alcohol is hydrocarbon with widely separated terminal hydroxyl groups, and was expressly developed as crosslinking agent for preparation of polyurethane propellants, binders and case liners.

B72-10560**SUPPRESSANTS FOR LOWERING PROPELLANT BINDER BURNING RATE**

W. W. Thompson (Rocketdyne)

Sep. 1972

ARC-10563

Addition of boron compound to lower burning rate of solid propellant binder is reported. Chemical reactions involved in propellant binder modification are described. Advantages of method for lowering burning rate are analyzed.

B72-10565**ANALYSIS OF MICROSIZED PARTICULATES**

M. B. Blanchard, N. H. Farlow, and G. V. Ferry

Sep. 1972 See also AIAA-PAPER-71-1104

ARC-10647

Unique methods for analyzing individual particles ranging in size from 0.01 to 1000 micrometers have been developed for investigation of nature of cosmic dust. Methods are applicable to particulate aerosols and contaminants characteristically encountered in studies of air pollution and in experiments designed to abate pollution.

B72-10566**ASSESSMENT OF WATER POLLUTION BY AIRBORNE MEASUREMENT OF CHLOROPHYLL**

J. C. Arvesen, E. C. Weaver, and J. P. Milland

Oct. 1972

ARC-10648

Remote measurement of chlorophyll concentrations to determine extent of water pollution is discussed. Construction and operation of radiometer to provide measurement capability are explained. Diagram of equipment is provided.

B72-10570**OXYGEN PLASMAS USED TO SYNTHESIZE SUPEROXIDES**

J. R. Hollahan and T. Wydevan

Sep. 1972

ARC-10686

Production of alkali metal superoxides by interaction of molecular oxygen with alkali metals or their salts is discussed. Diagram of reactor to show components and operating principles is provided. Analysis of chemical reactions involved is developed.

B72-10580**CHEMICAL KINETICS COMPUTER PROGRAM FOR STATIC AND FLOW REACTIONS**

D. A. Bittker and V. J. Scullin

Sep. 1972

LEWIS-11467

General chemical kinetics computer program for complex gas mixtures has been developed. Program can be used for any homogeneous reaction in either one dimensional flow or static system. It is flexible, accurate, and easy to use. It can be used for any chemical system for which species thermodynamic data and reaction rate constant data are known.

B72-10583**STUDY OF HOT HARDNESS CHARACTERISTICS OF TOOL STEELS**

J. L. Chevalier (Army Air Mobility R and D Lab.), M. W. Dietrich, and E. V. Zaretsky

Sep. 1972 See also NASA-TN-D-6632
LEWIS-11785

Hardness measurements of tool steel materials in electric furnace at elevated temperatures and low oxygen environment are discussed. Development of equation to predict short term hardness as function of initial room temperature hardness of steel is reported. Types of steel involved in the process are identified.

**B72-10587
THERMAL CONDUCTIVITY AND ELECTRICAL RESISTIVITY
OF POROUS MATERIALS**

J. C. Y. Koh (Boeing Co.) and A. Fortini
Oct. 1972 See also NASA-CR-120854
LEWIS-11754

Process for determining thermal conductivity and electrical resistivity of porous materials is described. Characteristics of materials are identified and used in development of mathematical models. Limitations of method are examined.

**B72-10592
HIGH STRENGTH HIGH MODULUS CERAMIC FIBER**

R. N. Fetterolf (Babcock and Wilcox Co.)
Sep. 1972
M-FS-21266

Low cost method was developed for producing high strength, high modulus, continuous ceramic oxide fibers. Process transforms inexpensive metallic salts into syrup-like liquids that can be fiberized at room temperatures. Resulting salt fibers are then converted to oxides by calcination at relatively low temperatures.

**B72-10594
SPARK ULTRASONIC TRANSDUCER**

J. M. Hoop
Dec. 1972
M-FS-21233

Nondestructive testing by spark transducer induces ultrasonic pulses in materials without physical contact. High power pulse generator connected to step up transformer produces sparking between two tungsten rods and ultrasonic energy pulses in test samples placed between rods.

**B72-10596
INVESTIGATION OF ENVIRONMENTAL EFFECTS ON
COATINGS FOR THERMAL CONTROL**

N. A. Ashford (IIT Res. Inst.), J. E. Gilligan (IIT Res. Inst.), and
G. A. Zerlaut (IIT Res. Inst.)
Dec. 1972
M-FS-21932

Accomplishments made during study of coatings are reported. Development of structure/property theory for selecting most appropriate pigments for space vehicle paints is discussed along with improvements made in zinc-oxide pigmented potassium silicate paint.

**B72-10612
FLEXIBLE THERMAL DEVICE**

S. D. Wallace (McDonnell-Douglas Corp.) and D. H. Elliott
(McDonnell-Douglas Corp.)
Oct. 1972
M-FS-21630

Fabrication of expansion joint, vibration isolator device with sufficient cross sectional area for high thermal conductivity is discussed. Device consists of multiple layers of metal foil which may be designed to meet specific applications. Thermodynamic properties of the device and illustration of construction are provided.

**B72-10627
DESIGN CRITERIA MONOGRAPH FOR HIGH-LOAD
HIGH-SPEED ROLLING-CONTACT BEARINGS**

Innovator not given (Lewis Res. Center) Nov. 1972 See also
NASA-SP-8048
LEWIS-11823

Monograph was published which summarizes and systematically orders large body of successful techniques and practices developed for design of liquid rocket engine turbopump bearings.

Document was written to organize and present significant experience and knowledge accumulated by NASA in development and operational programs.

**B72-10628
POLYIMIDE BONDED GRAPHITE FLUORIDE: A NEW LONG
LIFE SOLID LUBRICANT COATING**

R. L. Fusaro and H. E. Sliney
Nov. 1972 See also NASA-TN-D-6714
LEWIS-11864

Solid lubricant film consisting of polyimide varnish as binder and graphite fluoride as lubricant is described. Comparative wear tests with other solid lubricants were conducted and results are shown in graph form. Test equipment used in conducting wear tests is reported.

**B72-10633
DESIGN CRITERIA MONOGRAPH FOR PRESSURIZED
METAL CASES**

Innovator not given (Lewis Res. Center) 1972 See also NASA-
SP-8025
LEWIS-11856

Organization and presentation of data pertaining to design of solid propellant rocket engine cases are discussed. Design criteria are presented in form of monograph based on accumulated experience and knowledge. Improvements in reliability, cost effectiveness, and engine efficiency are stressed.

**B72-10666
AUTOMATION OF BOSCH REACTION FOR CO2 REDUC-
TION**

R. F. Holmes (Gen. Dyn. Corp.)
Dec. 1972
M-FS-21674

System for collecting excess carbon dioxide in space cabin is described. System collects carbon dioxide exhaled by human inhabitants and decomposes gas into carbon and water by reaction with hydrogen in presence of catalyst. Diagram of equipment involved in reaction is included.

**B72-10684
TUNGSTEN-REINFORCED TANTALUM**

R. J. Bacigalupi and R. Breitwieser
Dec. 1972
LEWIS-11750

Method is described for producing tungsten-reinforced tantalum, a material possessing the high temperature strength of tungsten and room temperature ductility and weldability of tantalum. This material is produced by bonding together and overlaying structure of tungsten wires with chemical vapor deposited tantalum.

**B72-10709
ULTRAVIOLET AND THERMALLY STABLE POLYMER
COMPOSITIONS**

M. J. Adamson, H. R. Gloria, R. E. Goldsberry, and R. F. Reinisch
Dec. 1972
ARC-10592

Copolymers produced from aromatic substituted aromatic azine-siloxane compositions are thermally stable, solar ultraviolet light non-degradable by wavelengths shorter than those reaching earth surface.

**B72-10710
REVERSE-OSMOSIS MEMBRANES BY PLASMA POLYMER-
IZATION**

J. R. Hollahan and T. Wydeven
Dec. 1972
ARC-10696

Thin allyl amine polymer films were developed using plasma polymerization. Resulting dry composite membranes effectively reject sodium chloride during reverse osmosis. Films are 98% sodium chloride rejective, and 46% urea rejective.

B72-10711

IMPROVED ZINC OXIDE THERMAL CONTROL COATINGS

T. Freund (Stanford Res. Inst.) and S. R. Morrison (Stanford Res. Inst.)
Dec. 1972
NPO-11139

Ferricyanide/ferrocyanide couple prevents zinc oxide pigment degradation in thermal control coatings. Chemical couple retards physical optical property changes.

B72-10717

IMPROVED TRANSMITTANCE MEASUREMENT WITH A MAGNESIUM OXIDE COATED INTEGRATING SPHERE

R. L. Bowman and E. W. Spisz
Dec. 1972 See also NASA-TM-X-2395
LEWIS-11840

Simple and convenient technique has been found for extending transmittance measurement capability of conventional magnesium oxide coated integrating sphere system at low (near ultraviolet) wavelengths. Technique can be used to determine effect of contaminants on window materials and can also be used for measurements on thermal control coatings and telescope mirrors.

B72-10725

HIGH FIELD CdS DETECTOR FOR INFRARED RADIATION

R. C. Tyagi (Natl. Res. Council), K. W. Boer (Del. Univ.), H. C. Hadley (Del. Univ.), and J. B. Robertson
Dec. 1972

LANGLEY-11027

New and highly sensitive method of detecting infrared irradiation makes possible solid state infrared detector which is more sensitive near room temperature than usual photoconductive low band gap semiconductor devices. Reconfiguration of high field domains in cadmium sulphide crystals provides basis for discovery.

B72-10728

LOW-VOID POLYIMIDE RESINS FOR AUTOCLAVE PROCESSING

R. J. Jones (TRW Systems) and R. W. Vaughan (TRW Systems)
Dec. 1972 See also B69-10118; B70-10300; B70-10330; B70-10504; B71-10442; B72-10175; NASA-CR-72984

LEWIS-11665

Development of an advanced A-type polyimide, which can be used to produce autoclave molded, low-void content composites suitable for use at temperatures up to 316 C is reported. It consists of a mixture of methyl nadic anhydride, an 80:20 molar ratio of methylene dianiline and thiodianiline, and pyromellitic dianhydride.

B72-10740

BORON-10 LOADED INORGANIC SHIELDING MATERIAL

S. I. Baker (IIT Res. Inst.) and R. S. Ryskiewicz (IIT Res. Inst.)
Dec. 1972

M-FS-22280

Shielding material containing Boron 10 and gadolinium for neutron absorption has been developed to reduce interference from low energy neutrons in measurement of fission neutron spectrum using Li-6 fast neutron spectrometer.

B72-10742

HEAT TRANSFER CORRELATIONS FOR KEROSENE FUELS AND MIXTURES AND PHYSICAL PROPERTIES FOR JET A FUEL

G. H. Ackerman (Shell Oil Co.) and L. E. Faith (Shell Oil Co.)
Dec. 1972 See also LEWIS-11653; NASA-CR-72951

LEWIS-11652

Heat transfer correlations are reported for conventional Jet A fuel for both laminar and turbulent flow in circular tubes. Correlations were developed for cooling in turbine engines, but have broader applications in petroleum and chemical processing, and other industrial applications.

B72-10746

A STABLE LIQUID CRYSTAL FOR ELECTRO-OPTICAL DISPLAYS

M. M. Lakes (Temple Univ.)

Dec. 1972

HQ-10714

Method is reported for substitution of hydroxy (OH) group ortho to anil linkage to stabilize anil-type liquid crystal for use in electro-optical devices.

B73-10002

GETTERING CAPSULE FOR REMOVING OXYGEN FROM LIQUID LITHIUM SYSTEMS

L. K. Tower and R. Breitwieser
Mar. 1973

LEWIS-11509

Capsule consisting of tantalum shell lined with tantalum screen and partially filled with lithium and pieces of yttrium is immersed in hot lithium stream. Oxygen is removed from stream by being absorbed by gettering capsule. Oxygen passes through capsule wall and into lithium inside capsule where it reacts with yttrium to form Y₂O₃.

B73-10007

FIBER COMPOSITE MATERIALS: A SURVEY OF FIBER MATRIX INTERFACE MECHANICS

C. C. Chamis
Mar. 1973 See also NASA-TN-D-6588

LEWIS-11924

Report is described which discusses mechanism of load transfer from matrix to fiber through interface and effects of interface on composite structural integrity. Theoretical considerations are supplemented with experimental data. General trends and significant points are illustrated graphically.

B73-10014

TECHNIQUE FOR THE POLYMERIZATION OF MONOMERS FOR PPQ/GRAPHITE FIBER COMPOSITES

T. T. Serafini, P. Delvigs, and R. D. Vannucci
Mar. 1973 See also B71-10442

LEWIS-11879

Impregnation of fiber prior to appreciable polymerization completely eliminates impregnation problems encountered with use of high viscosity high molecular weight polyphenylquinoxalines (PPQ) solutions. Major part of polymerization of reactant mixture is conducted on fiber during solvent removal and final curing stages.

B73-10019

RUBBER COMPOSITION COMPATIBLE WITH HYDRAZINE

J. Repar (Accessory Products Co.)
Jan. 1973

NPO-11440

Formulation improves compatibility of butyl rubbers with hydrazine while reducing permeation to low levels necessary for prolonged storage in space. This is accomplished by replacing carbon-black filler with inert materials such as hydrated silica or clay. Pressure increases suggest that hydrazine is decomposed only slightly by new type of rubber.

B73-10020

EVALUATION OF THERMAL INSULATION MATERIALS

O. J. Wilbers (McDonnell Douglas Corp.), J. C. Conti (McDonnell Douglas Corp.), J. V. McGee (McDonnell Douglas Corp.), and J. I. McPherson (McDonnell Douglas Corp.)
Jan. 1973 See Also NASA-CR-109612

NPO-11586

Data was obtained on silicone-bonded fiberglass, isocyanurate foam, and two dozen other insulators. Materials were selected to withstand heat sterilization, outer space, and the Martian atmosphere. Significant environmental parameters were vibration, landing shock, and launch venting.

B73-10021

INCREASING THE SENSITIVITY OF THE JAFFE REACTION FOR CREATININE

H. Y. Tom
Jan. 1973

NPO-11587

Study of analytical procedure has revealed that linearity of creatinine calibration curve can be extended by using 0.03 molar

picric acid solution made up in 70 percent ethanol instead of water. Three to five times more creatinine concentration can be encompassed within linear portion of calibration curve.

B73-10022
METHOD FOR ESTIMATING SOLUBILITY PARAMETER

D. D. Lawson and J. D. Ingham

Jan. 1973

NPO-11647

Semiempirical correlations have been developed between solubility parameters and refractive indices for series of model hydrocarbon compounds and organic polymers. Measurement of intermolecular forces is useful for assessment of material compatibility, glass-transition temperature, and transport properties.

B73-10024
STABLE PALLADIUM ALLOYS FOR DIFFUSION OF HYDROGEN

M. Patapoff

Jan. 1973

NPO-11747

Literature search on hydrogen absorption effect on palladium alloys revealed existence of alloy compositions in which alpha beta transition does not take place. Survey conclusions: 40% gold alloy of palladium should be used in place of palladium; alloy must be free of interstitial impurities; and metallic surfaces of tube must be clean.

B73-10030
AUTOMATED METHOD FOR STUDY OF DRUG METABOLISM

R. L. Furner and D. D. Feller

Feb. 1973

ARC-10469

Commercially available equipment can be modified to provide automated system for assaying drug metabolism by continuous flow-through. System includes steps and devices for mixing drug with enzyme and cofactor in the presence of pure oxygen, dialyzing resulting metabolite against buffer, and determining amount of metabolite by colorimetric method.

B73-10036
GLASS TRANSITION TEMPERATURES OF LIQUID PREPOLYMERS OBTAINED BY THERMAL PENETROMETRY

J. E. Potts, Jr. (Union Carbide Corp.) and A. C. Ashcraft (Union Carbide Corp.)

Feb. 1973

NPO-11730

Thermal penetrometry is experimental technique for detecting temperature at which frozen prepolymer becomes soft enough to be pierced by weighted penetrometer needle; temperature at which this occurs is called penetration temperature. Apparatus used to obtain penetration temperatures can be set up largely from standard parts.

B73-10037
TLC DETERMINATION OF FUNCTIONALITY IN PREPOLYMERS

J. E. Potts, Jr. (Union Carbide Corp.) and A. C. Ashcraft (Union Carbide Corp.)

Feb. 1973

NPO-11731

Application of thin-layer chromatographic provides rapid qualitative determination of functional distribution in experimental prepolymer. Functionality distribution is of fundamental importance for it determines: (1) manner in which given carboxyl-terminated prepolymer will cure and (2) physical properties of resulting product.

B73-10039
AN INEXPENSIVE AND EFFECTIVE METHOD FOR CALCULATING THE STRENGTH OF RANDOMLY REINFORCED FIBER COMPOSITES

C. C. Chamis

Mar. 1973 See also NASA-TN-D-6696

LEWIS-11985

Planar randomly reinforced fiber composites (PRRFC) is pseudoisotropic laminate with large number of ply orientation combinations where strength is function of these ply orientation combinations. Laminate theory can be applied to determine strength of PRRFC, and in conjunction with composite micro- and macromechanics can predict mechanical properties of PRRFC's with any fiber/matrix combination.

B73-10044
A SPIRALED NIOBIUM TIN SUPERCONDUCTIVE RIBBON

W. D. Coles

Feb. 1973 See also NASA-TM-X-68124

LEWIS-11726

Copper film is vapor-deposited on clean ribbon and sprayed with photosensitive etch-resistant material. Photographic film masks are placed on ribbon and exposed to ultraviolet light. Etchant removes copper and exposure to oxidizing atmosphere forms niobium oxide. Photosensitive material is removed and ribbon is immersed in molten temperatures.

B73-10056
VAPOR PHASE GROWTH OF GROUP 3, 4, AND 5 COMPOUNDS BY HCl TRANSPORT OF ELEMENTS

R. C. Tyagi (NCR Res. Associate), W. J. Debnam, Jr., M. F. McNear, R. K. Crouch, and R. A. Breckenridge

Feb. 1973

LANGLEY-11144

Technique has been devised for vapor-phase epitaxial growth of group 3, 4, and 5 binary, ternary, or quaternary compounds by HCl transport of the constituent elements or dopants. Technique uses all the constituents of the alloy system in their elemental form. Transport of these elements by an HCl + H₂ carrier gas facilitates their transport as subchlorides.

B73-10060
VACUUM-STRIPPED SILICONE BINDER FOR THERMAL-CONTROL PAINT

J. E. Gilligan (IIT Res. Inst.) and F. O. Rogers (IIT Res. Inst.)

Feb. 1973

M-FS-21397

Silicone elastomer is placed in evacuating system, heated to 160 C and held at this temperature for 24 hours. Elastomer is then cooled to room temperature in vacuum, producing upgraded, low outgassing polymer of increased molecular weight.

B73-10062
LUBRICATION HANDBOOK

M. E. Campbell and M. B. Thompson

Feb. 1973

M-FS-22326

Information on lubricants from government reports, military specifications, qualified parts lists, and suppliers of commercial lubricants has been consolidated in one source. Handbook includes data on chemical and physical properties of solid, bonded solid, and liquid lubricants; dispersions and composites; and greases, oils, and hydraulic fluids.

B73-10063
RESIDUAL STRESS EFFECTS ON THE IMPACT RESISTANCE AND STRENGTH OF FIBER COMPOSITES

C. C. Chamis

Apr. 1973 See also NASA-TM-X-52881; NASA-TN-D-6146; NASA-TN-D-6464

LEWIS-11984

Equations have been derived to predict degradation effects of microresidual stresses on impact resistance of unidirectional fiber composites. Equations also predict lamination residual stresses in multilayered angle ply composites.

B73-10068
METAL-METAL REINFORCED LAMINAR COMPOSITES

J. W. Weeton and C. A. Hoffman

Feb. 1973

04 MATERIALS/CHEMISTRY

LEWIS-11790

Two prototype laminar composites have shown potential for high strength and high temperature applications. These composites might be made with less in-place anisotropy and be less expensive than comparable fiber composites.

B73-10069

PRODUCTION OF CIRCULAR POLYMER-GLASS FABRIC COMPOSITES

E. E. Hardesty (Goldsworthy Engineering, Inc.)
Feb. 1973

M-FS-22125

Potentially automated pultrusion technique has been provided for production of curved, glass-reinforced polyimide, epoxy, and graphite reinforced structures. Specially designed apparatus has been manufactured for production of curved structures.

B73-10071

SEMI-ORGANIC STRUCTURAL ADHESIVE FOR ALUMINUM

S. C. Kwan (Monsanto Corp.), M. T. Lehman (Monsanto Corp.), E. A. McElhill (Monsanto Corp.), J. J. O'Connell (Monsanto Corp.), R. C. Steeves (Monsanto Corp.), and G. Tsigdiros (Monsanto Corp.)

Feb. 1973

M-FS-21328

Structural adhesive consists of titanium chelate polymer, reactive plasticizer, and cure accelerator (phenylsilanetriol). Mixture polymerizes in situ in 65 hours at 170 C.

B73-10077

OXIDATION RESISTANT, THORIA-DISPERSED NICKEL-CHROMIUM-ALUMINUM ALLOY

S. Baranow (Fansteel, Inc.) and L. J. Klingler (Fansteel, Inc.)
Mar. 1973 See also NASA-CR-120796

LEWIS-11541

Modified thoria-dispersed nickel-chromium alloy has been developed that exhibits greatly improved resistance to high-temperature oxidation. Additions of aluminum have been made to change nature of protective oxide scale entirely and to essentially inhibit oxidation at temperatures up to 1260 C.

B73-10079

FATIGUE OF BORON-ALUMINUM COMPOSITES BONDS AND JOINTS

M. S. Hersh (Gen. Dynamics Corp.)
Mar. 1973

M-FS-22325

Study examines effects of boron filament diameter on bonds and joints in boron-aluminum composite. Data include static strength, fatigue, and dynamic moduli of elasticity. Manson-Coffin analyses and metallurgical and fracture surface evaluation were also performed.

B73-10080

A NEW INTERMEDIATE FOR THE PRODUCTION OF FLEXIBLE STABLE POLYMERS

J. A. Webster (Monsanto Corp.)
Mar. 1973

M-FS-22355

Method of incorporating ether linkages into perfluoroalkylene segment of a dianhydride intermediate yields intermediate that may be used in synthesis of flexible, stable polyimides for use as high-temperature, solvent-resistant sealants.

B73-10081

METALLIC COMPOSITES AS HIGH-TEMPERATURE FASTENERS

F. D. George (United Aircraft Corp.)
Mar. 1973

M-FS-22438

Metallic composites can be fabricated in one-step process in which mixture is directionally solidified. Phase-reinforced eutectic alloys have superior high-temperature mechanical properties.

B73-10084

PREPARATION OF PREPREG GRAPHITE TAPE WITH INSOLUBLE POLYMER

C. I. Yates (Rockwell Intern. Corp.)
Mar. 1973 See also NASA-CR-115713

JSC-14313

Powdered polymer is finely ground. Second polymer, soluble, is mixed with appropriate solvent. Milled polymer and graphite filaments are added to soluble polymer-solvent solution to create slurry. Slurry is dried, and when ready for processing, the soluble, binder-polymer is removed by heat during precure or cure cycle.

B73-10085

FIRE RETARDANT CELLULOSIC FOAM

M. Luttinger (Battelle Mem. Inst.)
Mar. 1973

JSC-14336

Method mixture of cyanamide, phosphoric acid, and monobasic ammonium phosphates for preliminary treatment of paper. Papier-mache, in second step, is pulped in water and latex is added. Urea formaldehyde solution mixed to maximize foaming and resin dispersion is added. Mixture is then cast within 30 to 60 seconds and dried twice.

B73-10090

SELF-STERILIZING POLYMERS

J. J. Tulis (Becton, Dickinson and Co.), D. J. Daley (Becton, Dickinson and Co.), and G. B. Phillips (Becton, Dickinson and Co.)

Feb. 1973

M-FS-22054

Addition of approximately 1% paraformaldehyde to room-temperature-vulcanizing potting polymer results in effective, controllable germicide. When heated above ambient temperatures, paraformaldehyde releases dry formaldehyde, which can penetrate enclosed areas and packages, will not damage material, and leaves no permanent residue.

B73-10102

NONFLAMMABLE POTTING-ENCAPSULATING AND CONFORMAL COATING COMPOUNDS

S. L. Lieberman (Furane Plastics, Inc.)
Mar. 1973 See also NASA-CR-115364

JSC-14164; JSC-14166

Two fluorosilicone rubber formulations have been produced which are nonflammable or self-extinguishing. Extensive report was prepared which includes information on testing and describes many alternate formulations.

B73-10103

OXYGEN SENSITIVE PAPER

J. F. Whidby (GE)
Mar. 1973

M-FS-22354

Paper is impregnated with mixture of methylene blue and ethylenediaminetetraacetic acid. Methylene blue is photo-reduced to leuco-form. Paper is kept isolated from oxygen until ready for use. Paper can be reused by photo-reduction after oxygen exposure.

B73-10108

HOLOGRAPHIC NONDESTRUCTIVE TESTING OF LAMINATES

F. H. Stuckenberg (Rockwell Intern. Corp.)
May 1973

JSC-19107

Very small differences in laminate thickness result in interference fringes in holograph image. These indicate presence of unbonded area. Theoretical knowledge of membrane deflection may be used in conjunction with reduced number of pretest experiments to determine number of optical fringes that should appear for given laminate.

B73-10113

AUTOIGNITION TEST CELL WITH FLEXIBLE ATMOSPHERE CONTROL

D. Evans, C. L. Springfield, and C. Bryan (Southern Res. Inst.)

Jun. 1973
KSC-10198

Spontaneous combustion temperatures are usually found by simply heating material until it bursts into flames. Test cell allows control of test atmosphere and composition. Reusable device permits periodic sampling of decomposition products in test atmosphere. With modifications, cell could be used to determine melting points and reactivities of wide variety of substances.

B73-10121
LIGHTWEIGHT GRAPHITE/POLYIMIDE PANELS

J. G. Poesch (Hercules, Inc.) and J. B. Merlette (Hercules, Inc.)
May 1973 See also NASA-CR-115421; NASA-CR-115637;
NASA-CR-128610
JSC-14375

Panels are constructed of honeycombed polyimide/graphite core covered with thin face sheet of same material. Fabrication is based on extension of thin-gage graphite technology and modification of glass filament polyimide honeycomb techniques.

B73-10142
DESIGN AND MATERIAL SELECTION FOR INVERTER TRANSFORMER CORES

W. T. McLyman

Mar. 1973
NPO-11726

Report is announced which studied magnetic properties of candidate materials for use in spacecraft transformers, static inverters, converters, and transformer-rectifier power supplies. Included are material characteristics for available alloy compositions in tabular form, including: trade names, saturated flux density, dc coercive force, loop squareness, material density, and watts per pound at 3 KHz.

B73-10147
CALIBRATION OF DISSOLVED OXYGEN STANDARD FOR ANALYSIS WITH METHYLENE BLUE

J. F. Whidby (GE)

May 1973
M-FS-22353

Accurate standard solutions of oxygen can be prepared with this apparatus. Sample may be used as a dissolved oxygen standard with methylene blue or with other techniques such as gas chromatography.

B73-10148
A NEW CONCEPT FOR JOINING DISSIMILAR COMPOSITES

K. C. Dullea (Rockwell Intern. Corp.) and J. A. Evangelista (Rockwell Intern. Corp.)

May 1973
M-FS-24307

Bi-composite joint serves as interface between two dissimilar materials by interleaving plies of one composite with plies of another. This interleaving forms transition area between composites. Voids are filled in with epoxy resin to form strong, smooth transition between two materials.

B73-10149
AN IMPROVED TECHNIQUE FOR THE USE OF ZINC-RICH COATINGS

W. J. Paton

May 1973
KSC-10766

Blistering and peeling of topcoats used over ethyl silicate, inorganic, zinc-rich protective coatings are virtually eliminated when primer is allowed to cure outdoors for extended period of time and is moistened during process.

B73-10151
ION-TRACER ANEMOMETER

R. L. Bass (Southwest Res. Inst.), T. E. Owen (Southwest Res. Inst.), C. R. Gerlach (Southwest Res. Inst.), and S. A. Suhler (Southwest Res. Inst.)

Mar. 1973
M-FS-21399

Gas velocity measuring instrument measures transport time of ion-trace traveling fixed distance between ionization probe

and detector probe. Electric field superimposes drift velocity onto flow velocity so travel times can be reduced to minimize ion diffusion effects.

B73-10153
THIN FILM THERMOELECTRIC DEVICES AS THERMAL CONTROL COATINGS: A STUDY

J. M. Clemons and A. C. Krupnick

May 1973 See also NASA-TM-X-64570
M-FS-21384

Peltier effect, Thomson effect, and Seebeck effect are utilized in design of thermal control coating that serves as versatile means for controlling heat absorbed and radiated by surface. Coatings may be useful in extreme temperature environment enclosures or as heat shields.

B73-10168
HYDROGEN-ENVIRONMENT EMBRITTLEMENT OF METALS: A STUDY

W. T. Chandler (Rockwell Intern. Corp.), R. P. Frohmer (Rockwell Intern. Corp.), R. P. Lewett (Rockwell Intern. Corp.), W. B. McPherson (Rockwell Intern. Corp.), and R. J. Walter (Rockwell Intern. Corp.)

Jun. 1973
M-FS-22540

Study includes extensive tests examining effects of hydrogen environment on different high-strength metals and alloys. Recommendations for preventing metal failure include use of hydrogen-resistant coatings and inhibitors. Study includes references to related investigations and discussion of work in progress.

B73-10172
AUTOCALVE HEAT TREATMENT FOR PREALLOYED POWDER PRODUCTS

J. C. Freche and R. L. Ashbrook

May 1973 See also NASA TN-D-7117
LEWIS-11953

Technique could be applied directly to loose powders as part of hot pressing process of forming them to any required shapes. This would eliminate initial extrusion step commonly applied to prealloyed powders, substantially reduce cost of forming operation, and result in optimum properties.

B73-10180
NEW EXPLOSIVE SEAM WELDING CONCEPTS

L. J. Bement

Jun. 1973 See also B72-10002
LANGLEY-11211

Recently developed techniques provide totally-confined linear explosive seam welding and produce scarf joint with linear explosive seam welding. Linear ribbon explosives are utilized in making narrow, continuous, airtight joints in variety of aluminum alloys, titanium, copper, brass, and stainless steel.

B73-10187
HANDBOOK ON THERMOPHYSICAL PROPERTIES OF OXYGEN

H. M. Roder (NBS), L. A. Weber (NBS), P. M. Ordin, and G. Mandel

Jun. 1973 See also NASA-SP-3071; NASA-SP-3072
LEWIS-11962

Handbook has been compiled by Cryogenic Data Center of National Bureau of Standards. It covers thermodynamic functions, physical properties, and heat transfer data for oxygen. Handbook addresses primarily low temperature regime, but also includes some data above room temperature.

B73-10188
HANDBOOK OF CLEANING REQUIREMENTS, PROCEDURES, AND VERIFICATION TECHNIQUES FOR OXYGEN SYSTEMS

H. Bankaitis and C. F. Schueller

Jun. 1973 See also NASA-SP-3071; NASA-SP-3072
LEWIS-11963

Oxygen system cleaning specifications have been drawn from

04 MATERIALS/CHEMISTRY

twenty-three government and industrial sources. Cleaning processes for meeting these specifications and recommended postcleaning inspection procedures are compiled in handbook. Microfiche supplement of pertinent pages of listed references is included.

B73-10194 REDUCTIVE CLEAVAGE OF THE PEPTIDE BOND

J. Holian and W. M. Garrison

Jun. 1973

LRL-10026

In many biological research efforts, long chain organic molecules are studied by breaking large molecules into smaller components. Cleavage technique of recent interest is the use of solvated electrons. These are formed when aqueous solutions are bombarded with gamma radiation. Solvated electron is very reactive and can reduce most any species present, even to form free radicals.

B73-10208 THERMALLY RESPONSIVE MECHANICAL ACTUATOR

J. M. Madey

Aug. 1973

GSFC-11697

Device built for use in heat control, heat measurement, and mechanical actuation by heat include thermometers, thermostats, safety switches, circuit breakers, and mechanical actuators. Silicon rubber has highest coefficient of expansion of any known material and seems suitable for most of these devices.

B73-10213 EFFECTS OF ENVIRONMENTAL EXPOSURE ON CRYOGENIC THERMAL INSULATION MATERIALS

R. T. Parmley (Lockheed Missiles & Space Co.), F. J. Smith (Lockheed Missiles & Space Co.), A. P. Glassford (Lockheed Missiles & Space Co.), J. Coleman (Lockheed Missiles & Space Co.), and D. R. Stevenson (Lockheed Missiles & Space Co.)

Nov. 1973 See also NASA-CR-120978; NASA-CR-120979

LEWIS-12007

Investigation was made to optimize selection of insulation materials for reusable space vehicles which will be repeatedly operated over periods of up to ten years. Results of study are summarized in two reports. Volume I describes tests and significant findings. In Volume II, extensive test data obtained are organized in handbook form.

B73-10215 REFRACTORY PORCELAIN ENAMEL PASSIVE-THERMAL-CONTROL COATING FOR HIGH-TEMPERATURE SUPER-ALLOYS

H. Levin (Hughes Aircraft Co.), B. H. Auken (Hughes Aircraft Co.), and M. N. Gardos (Hughes Aircraft Co.)

Aug. 1973

M-FS-22324

Study was conducted to match thermal expansion coefficients thereby preventing enamels from cracking. Report discusses various enamel coatings that are applied to two different high-temperature superalloys. Study may be of interest to manufacturers of chemical equipment, furnaces, and metal components intended for high-temperature applications.

B73-10224 CHEMICAL PRETREATMENT FOR THE DISTILLATION OF URINE

T. L. Hurley (Chemtrac Inc.)

Aug. 1973 See also NASA-CR-128878

JSC-14225

Pretreatment of urine prevents micro-organism growth in boiler and kills micro-organisms in condenser. Chemicals also clean evaporation surface, fix ammonia in boiling chamber, and suppress foaming.

B73-10228 FORMALDEHYDE MONITOR FOR AUTOMOBILE EXHAUSTS

W. C. Easley

Aug. 1973

LANGLEY-11352

Device makes use of microwave spectral absorption in low-Q resonant Stark cell, and indications are that ultimate sensitivity of instrument is within 100 parts per billion of formaldehyde. Microwave source is very small and requires only six-volt dc bias for operation. Coarse tuning is accomplished mechanically and fine tuning by adjusting dc-bias voltage.

B73-10238 APPLYING HIGH-EMITTANCE AND SOLAR-ABSORPTANCE COATING TO ALUMINUM

D. J. Progar

Aug. 1973

LANGLEY-10151

Coated surface withstands space environment with negligible change in radiation characteristics and physical properties. Process can be used with any porous substance, as long as pores are large enough to allow molecules of reacting solutions to enter and yet not so large as to allow nickel sulfide to be leached out of pores before sealing.

B73-10253 AUTOMATIC DEVICE FOR SHELL FREEZING OF LIQUIDS

B. Kelbaugh, C. Owen, and G. L. Picciolo

Oct. 1973

GSFC-11737

Unit is insulated enclosure designed to contain liquid nitrogen. It also includes set of stainless steel rotating rods for holding vessels containing liquids to be frozen, and electric drive mechanism for rotating these rods. Present device will accept 10 vessels at a time.

B73-10254 GRAPHITE/POLYIMIDE LAMINATES WITH NEAR-ZERO THERMAL EXPANSION

W. N. Reynolds (Rockwell Intern. Corp.) and A. H. Striepen (Rockwell Intern. Corp.)

Aug. 1973

JSC-17662; JSC-17928

Composite structures can be laminated to have very low coefficients of thermal expansion. Such structures are light and strong and have many uses where expansion or contraction with temperature change is undesirable. One application is with instruments that measure thermal expansion.

B73-10260 ZETA POTENTIAL CONTROL FOR ELECTROPHORESIS CELLS

G. L. Fogal (GE)

Aug. 1973

M-FS-22333

Zeta potential arises from fact that ions tend to be adsorbed on surface of cell walls. This potential interfaces with electric field sensed by migrating particles and degrades resolution of separation. By regulating sign and magnitude of applied potential induced charge can be used to increase or decrease effective wall zeta potential.

B73-10269 FABRICATION TECHNIQUES FOR POLYBENZIMIDAZOLE COMPOSITES

J. A. Parker, E. L. Winkler, D. Kourtides, and B. S. Marks (Lockheed Missiles & Space Co.)

Jul. 1973 See also NASA-CR-1723

ARC-10724

Performance of polybenzimidazole composites as ablation shields can be substantially improved by thermal crosslinking. Program was designed to develop new processing methods and techniques for fabrication of polybenzimidazole composites. Report, which describes fabrication in detail, also includes specification and manufacturing standards.

B73-10271 'DRY-COLUMN' CHROMATOGRAPHY OF PLANT PIGMENTS

F. H. Woeller, M. F. Lehwalt, and V. I. Oyama
Jul. 1973

ARC-10780

Separation of plant pigments which can be accomplished on thin-layer silica plates with mixture of petroleum ether, halocarbon, acetone, and polar solvent can be readily translated into dry-column technique that yields reproducible chromatograms after elution in fashion of liquid chromatography with fluorimeter as detector. Best solvent system was found to be mixture of petroleum ether, dichloromethane, acetone, and ethyl acetate.

B73-10310

LIQUID AND GASEOUS OXYGEN SAFETY REVIEW

A. Lapin (Air Products & Chemicals, Inc.)
Dec. 1973 See also NASA-CR-120922; SP-3071; SP-3072
LEWIS-12041

Materials used in oxygen systems and allowable oxygen environments are specified for each material. Design criteria, cleaning procedures and quality control methods are covered. Guidelines for protection against hazards involved with production, transportation, storage and use of oxygen are presented. Study also lists extensive references.

B73-10314

CREEP-FATIGUE ANALYSIS BY STRAINRANGE PARTITIONING

S. S. Manson, G. R. Halford, and M. H. Hirschberg
Dec. 1973 See also NASA-TM-X-67838; NASA-TM-X-68023; NASA-TM-X-68171

LEWIS-12072

Strainrange Partitioning provides unifying framework for characterizing high-temperature, low-cycle, creep-fatigue properties of metals and alloys. Method offers distinct advantage to designers of immediately providing reliable upper and lower bounds on cyclic life for any type of inelastic strain cycle that may be encountered in service.

B73-10315

RESISTANCE SPOT WELDING OF DISPERSION-STRENGTHENED NICKEL ALLOYS

T. J. Moore
Dec. 1973 See also NASA-TN-D-7256
LEWIS-12075

To develop easily-applied production method for resistance spot welding use unrecrystallized sheet material, develop welding schedule that will produce a solid-state spot weld without recrystallizing sheet, and postheat to produce grain growth across weld line during recrystallization of sheet material.

B73-10316

SINGLE CRYSTAL TUBES OF BETA ALUMINA

R. W. Stormont (Tyco Lab., Inc.), F. H. Cocks (Tyco Lab., Inc.), and J. D. Giner (Tyco Lab., Inc.)
Dec. 1973 See also NASA-CR-121033

LEWIS-11844

Edge-defined, film-fed growth process allows both tubular shapes and single crystallinity to be achieved. Beta alumina in single crystal form makes possible membranes with improved conductivities. Single crystal membranes also eliminate problems associated with electrical short circuiting of membrane due to possible sodium metal diffusion.

B73-10319

PREPARING THERMOPLASTIC AROMATIC POLYIMIDES

V. L. Bell
Sep. 1973
LANGLEY-11372

Method prepares aromatic polyimides with significantly reduced glass-transition temperatures and without accompanying loss of high-level thermo-oxidative stability which has been typical. This has been made possible by use of diamine monomers with specific stereoisomeric features.

B73-10328

ELECTROPHORESIS SEPARATOR COMBINING CENTRIFUGAL SEPARATION

H. W. Semon (GE)
Oct. 1973

M-FS-21396

Centrifugal force causes buffer, chosen to be denser than particles, to move outward and particles to move inward. Electrophoresis force can be made to equal centrifugal force. System tends not to be affected by convection and other disturbances that are so troublesome in conventional electrophoresis systems.

B73-10338

IMPROVED MOLD RELEASE FOR FILLED-SILICONE COMPOUNDS

O. E. Accountius (Rockwell Intern. Corp.)
Sep. 1973
JSC-19300

Ceramic and filled-plastic materials used for fabrication of tiles are relatively brittle and easily break as they are being removed from molds. Dusting mold surfaces with commercially available glass microspheres provides mold release superior to existing spray releases. Glass-microsphere dusting also permits removal of uncured tile which has very little strength.

B73-10339

DYNAMIC TECHNIQUE FOR MEASURING ADSORPTION IN A GAS CHROMATOGRAPH

C. L. Deuel (Analytical Res. Labs. Inc.), N. W. Hultgren (Analytical Res. Labs. Inc.), and M. L. Mobert (Analytical Res. Labs. Inc.)
Oct. 1973 See also NASA-CR-115202

JSC-14083

Gas-chromatographic procedure, together with mathematical analysis of adsorption isotherm, allows relative surface areas and adsorptive powers for trace concentrations to be determined in a few minutes. Technique may be used to evaluate relative surface areas of different adsorbates, expressed as volume of adsorbent/gram of adsorbate, and to evaluate their relative adsorptive power.

B73-10341

TRANSPARENT POLYMERIC LAMINATES

J. A. Parker, G. M. Fohlen, and P. M. Sawko
Aug. 1973

ARC-10783

Laminate prepared from epoxy-boroxine and phenolphthalein polycarbonate has high mechanical strength at elevated temperature and is resistant to impact, fire, and high-energy thermal radiation. Polycarbonate is prepared by reaction of phenolphthalein with phosgene in presence of amine catalyst and immiscible organic solvent phase.

B73-10349

LOW-RESISTIVITY HOMOGENEOUS ELASTOMERS

R. B. Somoano, Si.-P. S. Yen, and A. Rembaum
Aug. 1973
NPO-11881

Mixture of polyurethane polyelectrolyte and soluble, conducting organic compound produces homogeneous elastomer which has resistivity several orders of magnitude less than polyelectrolyte alone. Elastomeric material has novel resistivity dependence on temperature, that is, resistivity changes dramatically over narrow temperature range in vicinity of glass transition temperature.

B73-10357

PARTICULATE AND AEROSOL DETECTOR

W. H. Kinard, R. L. O'Neal, J. J. Wortman (Res. Triangle Inst.), R. P. Donovan (Res. Triangle Inst.), A. D. Brooks (Res. Triangle Inst.), and L. K. Monteith (Res. Triangle Inst.)
Oct. 1973

LANGLEY-11434

Particulate detector which monitors emissions from solid propellant fuels can monitor air quality. High signal-to-noise ratio detector can count aerosols and particles efficiently. Detector can distinguish one particle from another with respect to both time and energy of impact. Detector consists of accelerator, capacitor sensor, and readout recording equipment.

B73-10371

THREE-DIMENSIONAL GAS TURBULENCE MEASUREMENT WITH A LASER-DOPPLER VELOCIMETER SYSTEM

C. E. Fuller (Remtech, Inc.)

04 MATERIALS/CHEMISTRY

Oct. 1973

M-FS-22713

Laser-Doppler system records gas-velocity data over wide dynamic range in three-dimensional space without physical probe. System detects shift in laser beam scattered by flowing particles and uses this frequency to calculate particle velocities. Technique is based on principle that laser beam scattered by flowing particles is shifted in frequency by amount proportional to laser frequency.

B73-10372

MATERIALS DATA HANDBOOK ON TITANIUM 6Al-4V

R. F. Muraca (Western Appl. Res. and Develop., Inc.) and J. S. Whittick (Western Appl. Res. and Develop., Inc.)

Oct. 1973

M-FS-22796

Handbook has been prepared which describes latest property information on titanium 6Al-4V. Scope of information presented includes physical- and mechanical-property data at cryogenic, ambient, and elevated temperatures, supplemented with useful information in such areas as material procurement, metallurgy of alloy, corrosion, environmental effects, fabrication, and joining technology.

B73-10373

MATERIALS DATA HANDBOOKS ON ALUMINUM ALLOYS

R. F. Muraca (Western Appl. Res. and Develop., Inc.) and J. S. Whittick (Western Appl. Res. and Develop., Inc.)

Oct. 1973

M-FS-22798

Five handbooks have been prepared which describe up-to-date properties of the following wrought-aluminum alloys: 2014, 2219, 5456, 6061, and 7075. Each handbook is divided into twelve chapters. Scope of information presented includes physical- and mechanical-property data at cryogenic, ambient, and elevated temperatures.

B73-10376

CATALYTIC REACTOR WITH DISPOSABLE CARTRIDGE

C. M. McCullough (Appl. Electrochemistry, Inc.)

Sep. 1973

ARC-10747

Catalytic reactor, disposable cartridge enclosing iron catalyst, acts as container for solid carbon formed by decomposition of carbon monoxide. Deposition of carbon in other parts of oxygen recovery system does not occur because of lack of catalytic activity; filters trap carbon particles and prevent their being transported outside reaction zone.

B73-10385

LONG-TERM MATERIAL COMPATIBILITY TESTING SYSTEM

L. R. Toth, R. S. Weiner, D. C. Griffin, Jr., and R. W. Porter

Sep. 1973

NPO-11776

System includes procedure for hermetically sealing solid materials and fluids in glass ampoule and use of temperature-controlled facility containing sample holder, which permits sample containers to be retrieved safely and conveniently. Solid material and fluid are sealed within chemically-clean glass ampoule according to highly detailed procedure.

B73-10388

BALSA WOOD AS AN ENERGY DISSIPATOR

A. C. Knoell

Sep. 1973

NPO-11839

Studies have been undertaken to determine response of balsa wood in variety of environmental conditions. Response is dependent upon state of balsa wood as well as environment to which it is exposed, but certain combinations of conditions serve to increase significantly energy-dissipating capacity of wood relative to its normal capacity.

B73-10394

AN EQUATION OF STATE FOR OXYGEN AND NITROGEN

R. T. Jacobsen (Idaho Univ.), A. F. Myers (Idaho Univ.), and R. B. Stewart (Idaho Univ.)

Oct. 1973 See also NASA-CR-128525; NASA-CR-128527; NASA-CR-128528

JSC-14465

Recent measurements of thermodynamic properties of oxygen and nitrogen have provided data necessary for development of a single equation of state for both fluids. Data are available in summary report and two-part detailed study on thermodynamic properties of oxygen and nitrogen. Same data are used to develop vapor-pressure equation and heat-capacity equation.

B73-10396

MATERIALS DATA HANDBOOK ON INCONEL ALLOY 718

R. F. Muraca (Western Appl. Res. and Develop., Inc.) and J. S. Whittick (Western Appl. Res. and Develop., Inc.)

Oct. 1973

M-FS-22793

Handbook is divided into twelve chapters. Scope of information presented includes physical- and mechanical-property data at cryogenic, ambient, and elevated temperatures. This is supplemented with useful information in such areas as material procurement, metallurgy of alloy, corrosion, environmental effect, fabrication, and joining techniques. Design data are presented, as available.

B73-10397

MATERIALS DATA HANDBOOKS ON STAINLESS STEELS

R. F. Muraca (Western Appl. Res. and Develop., Inc.) and J. S. Whittick (Western Appl. Res. and Develop., Inc.)

Oct. 1973

M-FS-22797

Two handbooks which summarize latest available data have been published. Two types of stainless steels, alloy A-286 and Type 301, are described. Each handbook is divided into twelve chapters. Scope of information presented includes physical- and mechanical-property data at cryogenic, ambient, and elevated temperatures.

B73-10400

LIGHTWEIGHT INFLATABLE MATERIAL WITH LOW PERMEABILITY

E. C. White and F. R. Matthews

Oct. 1973

LANGLEY-10928

Material features combination of Mylar, for strength, and Saran, for impermeable qualities. Second lamination of Mylar prevents blocking, adds strength, and increases barrier rating. Different combinations of laminations produce variety of thicknesses and barrier ratings. Material can be metallized for increased barrier reliability and radar reflectivity, and can be treated with a heat-resistant coating.

B73-10402

DESIGN OF A UNIT TO PRODUCE HOT DISTILLED WATER FOR THE SAME POWER CONSUMPTION AS A WATER HEATER

R. A. Bambenek (Chemtrac Inc.) and P. P. Nuccio (Chemtrac Inc.)

Nov. 1973 See also NASA-CR-128878

JSC-14224

Unit recovers 97% of water contained in pretreated waste water. Some factors are: cleansing agent prevents fouling of heat transfer surface by highly concentrated waste; absence of dynamic seals reduces required purge gas flow rate; and recycle loop maintains constant flushing process to carry cleansing agent across evaporation surface.

B73-10403

INTEGRATING-SPHERE COATING

J. W. Stuart

Nov. 1973

GSFC-11214

Sodium chloride, used with proper solvent-dispersant combination, forms very durable reflective coatings. Several other inorganic salts, such as barium sulfate, barium carbonate, sodium

fluoride, potassium chloride, sodium hexafluorosilicate, and aluminum oxide, are also suitable. Sodium chloride may also be used with other formulations to produce same type of coating.

B73-10406
GAS CHROMATOGRAPHY OF VOLATILE ORGANIC COMPOUNDS

A. Zlatkis (Houston Univ.)

Dec. 1973

JSC-14428

System has been used for problems such as analysis of volatile metabolites in human blood and urine, analysis of air pollutants, and in tobacco smoke chemistry. Since adsorbent is reusable after proper reconditioning, method is both convenient and economical. System could be used for large scale on-site sampling programs in which sample is shipped to central location for analysis.

B73-10407
RADIOCHEMICAL SYNTHESIS OF PURE ANHYDROUS METAL HALIDES

W. H. Philipp, S. J. Marsik, and C. E. May

Dec. 1973 See also B72-10439

LEWIS-11860

Method uses radiation chemistry as practical tool for inorganic preparations and in particular deposition of metals by irradiation of their aqueous metal salt solutions with high energy electrons. Higher valence metal halide is dissolved in organic liquid and exposed to high energy electrons. This causes metal halide to be reduced to a lower valence metal halide.

B73-10424
ESTIMATING SORBER CAPACITY FOR MULTIPLE CONTAMINANTS

T. M. Olcott (Lockheed Missiles & Space Co.) and R. A. Lamparter

Dec. 1973 See also NASA-CR-2027

LANGLEY-11056

Computer program estimates quantity of activated charcoal required to control multiple contaminants. Program scans all contaminants by potential parameter value and then orders them from lowest to highest values. It calculates quantity of sorbent required to remove most strongly adsorbed material; and then, using potential plot data, capacity of other materials is calculated on basis of corrected capacity.

B73-10437
AN AUTOMATED REMOTE MARSHLAND WATER-SAMPLING STATION

D. F. Thomas

Feb. 1974

LANGLEY-11503

Station may be made to turn on and off remotely in response to radio, audio, photo, or other suitable signals, as well as by hard-wire switching. Station will remain operational under conditions of 4-foot tidal variations, along with 4-foot wave action, and will withstand hurricane-force winds without toppling over.

B73-10447
NEW METHOD FOR DETERMINING THERMOPHYSICAL PROPERTIES OF TEST SPECIMENS

R. A. Jones

Feb. 1974

LANGLEY-11053

Model can be tested directly, which eliminates costly, time-consuming, and inaccurate method of making test models solely for purpose of determining thermophysical properties. Method is adaptable to numerous modifications and variations.

B73-10453
PROBABILITY OF STRESS-CORROSION FRACTURE UNDER RANDOM LOADING

J. -N. Yang

Jan. 1974

NPO-13113

Mathematical formulation is based on cumulative-damage hypothesis and experimentally-determined stress-corrosion

characteristics. Under both stationary random loadings, mean value and variance of cumulative damage are obtained. Probability of stress-corrosion fracture is then evaluated, using principle of maximum entropy.

B73-10457
HIGH-TEMPERATURE GAS/LIQUID STRESS RELAXOMETERS

S. H. Kalfayan and R. H. Silver

Mar. 1974

NPO-13168

Two relaxometers allow testing of elastomers in various fluids. First relaxometer uses fork-like loading spacer interposed between loading lever and support ring, so that sample is stretched predetermined amount. In second relaxometer, degree of initial elongation is set by means of adjustable collar, which, when locked in place on piston rod, enables sample to be stretched predetermined length.

B73-10469
ULTRAVIOLET REFLECTIVE COATING

J. B. Schutt

Mar. 1974

GSFC-11786

Composition consists of dispersion of barium sulphate in aqueous solution of water-soluble inorganic binder. Binder is selected from group consisting of alkali metal sulphates. Coating exhibits high reflectance of ultraviolet light to wavelengths of approximately 200.0 nm, which compares favorably with high reflectance of virgin barium sulphate power.

B73-10475
VAPOR-DEPOSITED PLATINUM AS A FUEL-CELL CATALYST

W. J. Asher (Exxon Corp.) and J. S. Batzold (Exxon Corp.)

Mar. 1974 See also B73-10472; B73-10473; B73-10489

M-FS-21317

Electrodes are prepared by vacuum deposition of platinum on nickel substrate with conventional vapor-deposition apparatus. Amount of platinum loaded on substrate can be varied by changing exposure time during deposition. These electrodes are significantly more effective than conventional oxygen electrodes.

B73-10481
WELDING HIGH-STRENGTH ALUMINUM ALLOYS

P. G. Parks, R. V. Hoppes, E. A. Hasemeyer, and K. Masubuchi (MIT)

Mar. 1974

M-FS-22918

Handbook has been published which integrates results of 19 research programs involving welding of high-strength aluminum alloys. Book introduces metallurgy and properties of aluminum alloys by discussing commercial alloys and heat treatments. Several current welding processes are reviewed such as gas tungsten-arc welding and gas metal-arc welding.

B73-10483
TRANSFER OF GASEOUS OXYGEN FROM HIGH-PRESSURE CONTAINERS AND THE JOULE-THOMSON INVERSION

E. R. Schumann (Bendix Corp.)

Mar. 1974

KSC-10721

From the experiments performed in study, it was determined that oxygen transferred at ambient temperature and pressures up to 10,000 psig consistently dropped in temperature. All results therefore indicate that gaseous oxygen transferred at ambient temperature does not exhibit Joule-Thomson inversion below 10,000 psig.

B73-10503
SOIL MOISTURE BY EXTRACTION AND GAS CHROMATOGRAPHY

E. L. Merek and G. C. Carle

Dec. 1973

ARC-10748

04 MATERIALS/CHEMISTRY

To determine moisture content of soils rapidly and conveniently extract moisture with methanol and determine water content of methanol extract by gas chromatography. Moisture content of sample is calculated from weight of water and methanol in aliquot and weight of methanol added to sample.

B73-10504

REUSABLE SILICA SURFACE-INSULATION MATERIAL

H. E. Goldstein, M. Smith, and D. Leiser
Dec. 1973 See Also NASA-TM-X-2719

ARC-10721

Material was specifically developed for manufacture of insulating tiles, but it can be molded into other shapes as required. Basic raw materials are high-purity silica fiber, fumed-silica powder, and reagent-grade starch. Only purest materials are used, and care must be taken to avoid contamination during processing.

B73-10505

POLYIMIDE FIBER-GLASS COMPOSITE RESISTS HIGH TEMPERATURES

W. J. Gilwee, R. W. Rosser, and J. A. Parker
Dec. 1973

ARC-10782

Composites synthesized from bismaleimide have superior strength and oxidation resistance at elevated temperatures when compared with similar composites prepared with epoxy or silicon polymers of similar cost. Polyimide synthesis technique and processing method yield essentially void-free fiber-glass reinforced composites.

B73-10507

MOISTURE-RESISTANT COATINGS FOR OPTICAL COMPONENTS

J. R. Hollahan, T. Wydeven, and C. C. Johnson
Dec. 1973 See also B72-10710

ARC-10749

Plasma polymerization technique is used to apply thin, adherent, hydrophobic coatings from chlorotrifluoroethylene monomer. Apparently much of the chlorine contained in original monomer is lost during polymerization, and characteristic C-Cl absorption in infrared region is essentially absent.

B73-10522

SILICON ON SAPPHIRE FOR ION IMPLANTATION STUDIES

B. P. Pisciotta
Mar. 1974

LANGLEY-11415

Van der Pauw or bridge samples are ultrasonically cut from silicon on sapphire wafers. Contact pad regions are implanted with moderately heavy dose of ions. Ion of interest is implanted into sample; and, before being annealed in vacuum, sample is sealed with sputtered layer of silicon dioxide. Nickel or aluminum is sputtered onto contact pad areas and is sintered in nitrogen atmosphere.

B73-10527

SELECTIVE COATING FOR COLLECTING SOLAR ENERGY ON ALUMINUM

J. R. Lowery
Mar. 1974

M-FS-22562

Presently used coatings, which were originally developed for brass, copper, and steel substrates, yield relatively low absorptance/emittance ratios when applied to aluminum. Efficient, black-nickel plating applied to aluminum substrate enhances solar absorptance to 93% and reduces emittance to 6%.

B74-10002

A NEW NICKEL-BASE WROUGHT SUPERALLOY FOR APPLICATIONS UP TO 1033 K (1400 F)

W. B. Kent (Universal-Cyclops Corp.), H. L. Black (Universal-Cyclops Corp.), F. H. Harf, and S. G. Young
Mar. 1974 See also B74-10003; NASA-CR-120934

LEWIS-11827

Alloy was melted from high purity raw materials and cast ingots extruded at 1422 K. Material was hot rolled to 0.013 m

diameter bar stock. Partial solution heat-treatment followed by aging produced structure of fine gamma prime precipitate reinforcing gamma matrix containing coarser blocky gamma prime particles. Alloy can be processed by powder metallurgy.

B74-10003

NEW NICKEL-BASE WROUGHT SUPERALLOY WITH APPLICATIONS UP TO 1253 K (1800 F)

W. B. Kent (Universal-Cyclops Corp.), H. L. Black (Universal-Cyclops Corp.), R. V. Miner, Jr., F. H. Harf, and S. G. Young
Mar. 1974 See also B74-10002; NASA-CR-120934

LEWIS-11828

Alloy possesses combination of high tensile strength at low and intermediate temperatures to 1033 K with good rupture strength at high temperatures to 1255 K. Alloy has promise for turbine disk application in future gas turbine engines and for wrought integrally bladed turbine wheel; thickness and weight of disk portion of wheel could be reduced.

B74-10005

CRITERIA FOR SELECTING RESIN MATRICES FOR IMPROVED COMPOSITE STRENGTH

C. C. Chamis, M. P. Hanson, and T. T. Serafini
Mar. 1974 See also NASA-TM-X-68166

LEWIS-12057

Area under matrix of typical stress-strain diagram bounded by one percent strain is good index for priority assessment of matrix contribution to composite strength. Initial tangent modulus to stress-strain curve is useful parameter in translating matrix properties to composite properties.

B74-10007

ADDITION OF SILICON IMPROVES OXIDATION RESISTANCE OF NICKEL BASED SUPERALLOYS

C. E. Lowell and R. V. Miner, Jr.

Mar. 1974 See also NASA-TM-X-68191; NASA-TN-D-6838

LEWIS-12138

Specific weight changes of nickel-base superalloy B-1900 and B-1900 + 1% Si specimens were tested at 1273 K. B-1900 was losing weight at an increasing rate due to spalling of oxide scale while B-1900 + 1% Si was still gaining weight at low, nearly constant rate. Similar comparison in weight change was observed for specimens tested at 1373 K.

B74-10011

CASTING COPPER TO TUNGSTEN FOR HIGH-POWER ARC LAMP CATHODES

H. A. Will

Apr. 1974 See also NASA-TM-X-2865

LEWIS-12169

Voids forming at interface when copper is cast onto tungsten can be eliminated by adding wetting agent during casting process. Small amount of copper and nickel are cast onto thoriated tungsten insert, insert is recast with more copper to form electrode. Good thermal conductance results in long-lived cathode.

B74-10016

PLASMA-SPRAYED METAL-GLASS FLUORIDE COATINGS FOR LUBRICATION TO 1170 K (1650 F)

H. E. Sliney

Jun. 1974 See also NASA-TN-D-7556

LEWIS-11930

Plasma spray of Nichrome matrix composite contains dispersed glass for oxidation protection and calcium fluoride for lubrication. Coatings can be applied to bearing journals and bearing bores. Coating was easily machinable and had excellent bond strength on substrate metal.

B74-10017

IMPROVED EPITAXIAL PROCESS FOR FABRICATING SILICON CARBIDE SEMICONDUCTOR DEVICES

H. A. Will and J. A. Powell

Jun. 1974 See also NASA-TN-D-7558

LEWIS-12094

Process of growing epitaxial silicon carbide (SiC) layers on SiC substrates so that epitaxial growth is perpendicular to c-axis

by chemical vapor deposition process at temperatures of 1590 to 1660 K minimizes variations in stacking sequence and problems associated with high temperatures.

B74-10027
GLASS FIBER ADDITION STRENGTHENS LOW-DENSITY ABLATIVE COMPOSITIONS

H. H. Chandler (Martin Marietta Corp.)
 Apr. 1974

LANGLEY-11288

Approximately 15% of E-glass fibers was added to compositions under test and greatly improved char stability. Use of these fibers also reduced thermal strains which, in turn, minimized char shrinkage and associated cracks, subsurface voids, and disbands. Increased strength allows honeycomb core reinforcement to be replaced by equivalent amount of glass fibers.

B74-10032
METHODS FOR IMPROVED RESOLUTION OF FLOW ELECTROPHORESIS CELLS

L. R. McCreight (GE) and G. L. Fogal (GE)
 May 1974

M-FS-22223

First method involves remote adjusting of zeta potential. Second approach sandwiches two conducting metal plates between opposite cell walls and thin insulating layer. Third method forces buffer to flow in direction opposite particle streams.

B74-10036
COMBUSTION PRODUCTS GENERATING AND METERING DEVICE

R. E. Wiberg and J. A. Klisch
 Jul. 1974

GSFC-11095

Device simulates incipient fire conditions in closely-controlled adjustable manner, to give predetermined degree of intensity at selected locations throughout area, and to verify that detection system will respond. Device can be used with and for cross calibration and experimentation in conjunction with commercially available products of combustion analyzing meters.

B74-10052
ECONOMICAL TECHNIQUE FOR FRAGMENTATION TESTING

T. H. Smith, III (TRW Systems Group, TRW, Inc.) and B. A. Snoke (TRW Systems Group, TRW, Inc.)

May 1974

ARC-10792

Automatic rifle was modified for remote, single-shot use. To simulate statistically-determined fragment size from rocket-motor casing blunt-nosed bullet was made of same alloy. Cartridge was loaded with enough powder to make bullet reach target at same estimated velocity as shrapnel from rocket casing.

B74-10053
SILVER OXIDE SORBENT FOR CARBON DIOXIDE

G. V. Colombo (McDonnell-Douglas Corp.)
 May 1974 See also NASA-CR-114632

ARC-10797

Material can be regenerated at least 20 times by heating at 250 C. Sorbent is compatible with environment of high humidity; up to 20% by weight of carbon dioxide can be absorbed. Material is prepared from silver carbonate, potassium hydroxide or carbonate, and sodium silicate.

B74-10057
ENZYMATIC REGENERATION OF ADENOSINE TRIPHOSPHATE COFACTOR

D. L. Marshall (Battelle Mem. Inst.-Columbus Labs.)
 May 1974

ARC-10837

Regenerating adenosine triphosphate (ATP) from adenosine diphosphate (ADP) by enzymatic process which utilizes carbamyl phosphate as phosphoryl donor is technique used to regenerate expensive cofactors. Process allows complex enzymatic reactions to be considered as candidates for large-scale continuous processes.

B74-10073
CUSHION MODULE FOR STOWING ELECTRONIC EQUIPMENT

J. R. Rogers and R. M. Elam, Jr.
 Jun. 1974

ARC-10779

To provide vibration-resistance composition adjust processing techniques, which produces essentially void-free materials and provides for clean removal of finished material from mold. Microsphere filler imparts strength to polymer and sodium carbonate imparts flame-resistance.

B74-10074
VOLUME-REFLECTING DIELECTRIC HEAT SHIELD

P. R. Nachtsheim, D. L. Peterson, and J. T. Howe
 Jun. 1974

ARC-10803

White, volume-reflecting dielectric material absorbs essentially none of the incident radiant energy, and continues to reflect even though in severe environment its surface is melted and is being vaporized. Process of overall reflectance in dielectric material, involving internal refractions and reflections, is similar to process of reflection in paints.

B74-10077
NEW POLYMER SYSTEMS: CHAIN EXTENSION BY DIANHYDRIDES

R. A. Rhein and J. D. Ingham
 Jul. 1974

NPO-13046

Three anhydrides provide effective chain extension of hydroxy-terminated polyalkylene oxides and polybutadienes. Novel feature of these anhydride reactants is that they are difunctional as anhydrides, but they are tetrafunctional if conditions are selected that lead to total esterification or reaction of all carboxyl groups.

B74-10082
HIGH STRENGTH NICKEL BASE ALLOY, WAZ-16, FOR APPLICATIONS UP TO 2200 F

W. J. Waters and J. C. Freche
 Aug. 1974 See also NASA-TN-D-7648

LEWIS-12270

Alloy product is high strength, high temperature nickel base material with higher incipient melting temperature than all known nickel base alloys. It is microstructurally stable and has high impact resistance both before and after prolonged thermal exposure. It contains relatively few alloying constituents and low content of expensive and rare metals.

B74-10085
RAPID METHOD FOR DETERMINING NITROGEN IN TANTALUM AND NIOBIUM ALLOYS

E. J. Merkle, J. W. Graab, and W. F. Davis
 Sep. 1974 See also NASA-TM-X-3067

LEWIS-12237

Adaptation of commercial instrument which measures nitrogen and oxygen in steel gave results in less than four minutes. Sample is heated in helium atmosphere in single-use graphite crucible. Platinum flux facilitates melting of sample. Released gases are separated chromatographically and measured in thermal-conductivity cell.

B74-10095
DETECTION OF CRACKS IN SURFACE INSULATION

L. J. Leger
 Aug. 1974

MSC-14187

Volatile organic liquid surface penetrants used with appropriate detector paper leave tested surfaces uncontaminated. Method can be used to detect minute cracks in materials such as metal, glass, plastics, ceramics, etc.

B74-10096
IN-PROCESS OXIDATION PROTECTION IN FLUXLESS BRAZING OR DIFFUSION BONDING OF ALUMINUM ALLOYS

04 MATERIALS/CHEMISTRY

K. P. O'Kelly (LTV Aerospace Corp.) and A. B. Featherston (LTV Aerospace Corp.)

Aug. 1974 See also NASA-CR-128805

MSC-14435

Aluminum is cleaned of its oxide coating and is sealed immediately with polymeric material which makes it suitable for fluxless brazing or diffusion bonding. Time involved between cleaning and brazing is no longer critical factor.

B74-10111

ACCURATE THICKNESS MEASUREMENT OF EASILY COMPRESSED MATERIALS

L. W. Carlson (Rocketdyne/N. Am. Rockwell Corp.)

Aug. 1974

ARC-10551

Sheet of material is placed between two thin, uniform, and flat sheets of glass of known thickness; light pressure is applied by means of weights. Micrometer aids thickness measurement of sandwich. Thickness of two sheets of glass is then subtracted.

B74-10121

COMMERCIALLY AVAILABLE BLACK CHROME IS AN EFFECTIVE SOLAR COLLECTOR COATING

G. E. McDonald

Sep. 1974 See also NASA-TM-X-71596

LEWIS-12159

Black chrome, electroplated decorative finish, which absorbs and retains solar energy is readily available, easily applied, and low cost. It is indistinguishable from black nickel and is equally feasible on aluminum or steel.

B74-10122

GUIDEBOOK OF NONDESTRUCTIVE EVALUATION TECHNIQUES FOR MATERIALS AND STRUCTURES

A. Vary

Nov. 1974 See also NASA-SP-3079

LEWIS-12272

Seventy nondestructive techniques for evaluating material and structures are described in guidebook. Standardized format facilitates comparison of their merits and limitations for solving various problems. Guide includes index of flaw types and tabulated guide to use of nondestructive evaluation techniques. Alternative technique names are cross-referenced.

B74-10124

FABRICATION OF COMPLEX STRUCTURES OR ASSEMBLIES BY HOT ISOSTATIC PRESSURE (HIP) WELDING

A. N. Ashurst (Battelle Mem. Inst.), M. Goldstein (Battelle Mem. Inst.), M. J. Ryan (Battelle Mem. Inst.), G. G. Lessmann (Westinghouse Astronuc. Lab.), and W. A. Bryant (Westinghouse Astronuc. Lab.)

Nov. 1974 See also NASA-CR-120923; NASA-CR-72795

LEWIS-11490

HIP welding is effective method for fabricating complex structures or assemblies such as alternator rotors, regeneratively-cooled rocket-motor thrust chambers, and jet engine turbine blades. It can be applied to fabrication of many assemblies which require that component parts be welded together along complex interfaces.

B74-10132

SOFT, THERMALLY CONDUCTIVE MATERIAL

A. J. Anderson (Martin Marietta Corp.)

Sep. 1974

LANGLEY-10850

Silicon rubber filled with high percentage of silver-plated-copper microspheres provides soft, thermally conductive seat for thermal switch. Material also could be used in thin sheet form to prevent corrosion between dissimilar metals while maintaining good thermal communication. It could be used as thermal gasketing.

B74-10133

TWO-PHASE, PASSIVE SEPARATOR-AND-FILTER ASSEMBLY

A. C. Erickson (GE) and F. J. Porter, Jr. (GE)

Sep. 1974

LANGLEY-10976

Assembly separates liquid from gas by passive hydrophilic/hydrophobic material approach. Apparatus is comprised of porous glass hydrophilic tubes. Quantity, lateral size, and pore size of glass tubes are determined by particular design requirements with regard to water rate, water quality contamination level, application endurance life, and operating differential pressure level.

B74-10154

POLYMER COMPOSITIONS SUITABLE FOR USE IN ENRICHED OXYGEN ATMOSPHERES

E. C. Schule (Allied Chem. Corp.), P. P. Salatiello (Allied Chem. Corp.), and S. Chandrasekaran (Allied Chem. Corp.)

Sep. 1974 See also NASA-CR-134062

MSC-14618

Three organic polymer systems are based on copolymer of chlorotrifluoroethylene, ethylene, and tin-based flame retardants. Fourth system is copolymer of chlorotrifluoroethylene and tetrafluoroethylene. This system contains no stabilizers of flame retardant additives.

B74-10157

FLAME RESISTANT ELASTIC ELASTOMERIC FIBER

J. T. Howarth (Little/Arthur D./Inc.), S. Sheth (Little/Arthur D./Inc.), A. A. Massucco (Little/Arthur D./Inc.), and K. R. Sidman (Little/Arthur D./Inc.)

Sep. 1974 See also NASA-CR-128505

MSC-14331

Compositions exhibit elastomeric properties and possess various degrees of flame resistance. First material polyurethane, incorporates halogen containing polyol and is flame resistant in air; second contains spandex elastomer with flame retardant additives; and third material is prepared from fluorelastomer composition of copolymer of vinylidene fluoride and hexafluoropropylene.

B74-10159

POLYELECTROLYTES WITH HIGH CHARGE DENSITY

A. Rembaum and S.-P. S. Yen

Sep. 1974

NPO-11918

Polymers can be used as flocculants to clarify residential and industrial water supplies and as bactericidal and fungicidal agents. They can be used in preparation of electroconductive photocopy papers, to improve living cell adhesion to glass or plastic, and as anticancer agents.

B74-10175

SEMI-PERMANENT SEALING OF LEAKS IN HIGH VACUUM SYSTEMS

J. D. Christian and W. P. Gilbreath

Sep. 1974

ARC-10881

Silicone-rubber adhesive is applied externally to seal hair-line cracks in sections of high vacuum system while system is partially evacuated. No pretreatment of surface is required since adhesive will be drawn into crack while diffusion or ion pump is off.

B74-10177

DOMESTIC WASH WATER RECLAMATION

J. B. Hall, Jr., C. E. Batten, and J. R. Wilkins

Oct. 1974 See also NASA-TN-D-7600

LANGLEY-11606

System consists of filtration unit, reverse-osmosis module, tanks, pumps, plumbing, and various gauges, meters, and valves. After water is used in washing machine or shower, it is collected in holding tank. Water is pumped through series of five particulate filters. Pressure tank supplies processed water to commode water closet.

B74-10201

APPARATUS FOR MONITORING LINEAR EXPLOSIVE PERFORMANCE

L. J. Bement

Nov. 1974

LANGLEY-10800

Techniques provide performance monitoring standard for acceptance, lot qualification, and comparison testing of devices. Exhibit high degree of simplicity, accuracy, and reproducibility. Apparatus simultaneously measures explosive pressure stimulus energy, explosive cutting, or rupturing, ability, and detonation propagation rate.

B74-10208**VISUALIZATION OF SMOKE STACK PLUME**

R. J. Exton

Nov. 1974

LANGLEY-11675

System consists of ultraviolet vidicon tube, interference and color filters, ultraviolet telephoto lens, monitor, and waveform analyzer to extract information from video scene, stack plume viewed against sky. System will view SO₂ and any other element which absorbs light at wavelength used.

B74-10218**METALLIZED POLYMERIC FOAM MATERIAL**

B. A. Birnbaum (Hughes Aircraft Co.) and N. Bilow (Hughes Aircraft Co.)

Nov. 1974

ARC-10860

Open-celled polyurethane foams can be coated uniformly with thin film of metal by vapor deposition of aluminum or by sensitization of foam followed by electroless deposition of nickel or copper. Foam can be further processed to increase thickness of metal overcoat to impart rigidity or to provide inert surface with only modest increase in weight.

B74-10219**MOISTURE-RESISTANT BAFFLE MATERIAL FOR FUEL TANKS**

N. Bilow (Hughes Aircraft Co.)

Nov. 1974

ARC-10861

Test results indicated superiority of certain polyether-based polyurethanes as protective coatings and suggested that baffle-materials with one of these coatings should have useful life approximately twice that of uncoated foams now in use.

B74-10222**EVALUATION OF TEST PROCEDURES FOR HYDROGEN ENVIRONMENT EMBRITTLEMENT**

H. G. Nelson

Nov. 1974

ARC-10919

Report presents discussion of three common and primary influences on embrittlement process. Application of theoretical considerations to design of test coupons and methods is illustrated for both internal and external hydrogen embrittlement. Acceptable designs and methods are indicated.

B74-10244**HIGH-TEMPERATURE TENSILE TESTER FOR CERAMICS**

M. Smith

Dec. 1974

ARC-10822

Apparatus measures tensile strength of rigid, low-density ceramic materials at temperatures up to 1375 K. Tensile grips mate with tensile specimen and form top and bottom of lightweight furnace. Apparatus can only be used with rigid materials and grips must be stronger than material under test.

B74-10247**ADVANCED FIBER-COMPOSITE HYBRIDS--A NEW STRUCTURAL MATERIAL**

C. C. Chamis, R. F. Lark, and T. L. Sullivan

Dec. 1974 See also NASA-TM-X-71580

LEWIS-12118

Introduction of metal foil as part of matrix and fiber composite, or "sandwich", improves strength and stiffness for multidirectional loading, improves resistance to cyclic loading, and improves impact and erosion resistance of resultant fiber-composite hybrid structure.

B74-10248**ADVANCED TUNGSTEN FIBER-REINFORCED NICKEL SUPERALLOY**

D. W. Petrusek and R. A. Signorelli

Dec. 1974 See also B66-10551; B73-10003; NASA-CR-120925; NASA-TN-D-6881; NASA-TN-D-7773

LEWIS-12394

Matrix composition, fabrication technique, and fiber diameter were selected to minimize fiber-matrix reaction and preserve composite strength. Composites may be used in place of superalloys where higher strength or greater strength-to-density ratios are advantageous, and will permit higher operating temperatures in particular applications.

B74-10264**CONTROLLED INTERMITTENT INTERFACIAL BOND CONCEPT FOR COMPOSITE MATERIALS**

T. U. Marston (Univ. of Mich.) and A. G. Atkins (Univ. of Mich.)

Jan. 1975

LANGLEY-11628

Concept will enhance fracture resistance of high-strength filamentary composite without degrading its tensile strength or elastic modulus. Concept provides more economical composite systems, tailored for specific applications, and composite materials with mechanical properties, such as tensile strength, fracture strain, and fracture toughness, that can be optimized.

B74-10265**HIGH-STRENGTH ALLOY WITH RESISTANCE TO HYDROGEN-ENVIRONMENT EMBRITTLEMENT**

T. G. McNamara (Rockwell Intern. Corp.)

Jan. 1975

M-FS-19234

Alloy is precipitation-hardened, high-strength, and low-thermal-expansion materials. It is iron-based and contains nickel and chromium at lower levels than high-strength alloys. It is readily welded and brazed and has good oxidation resistance. Tests indicated there was no reduction of notched or smooth strength.

B74-10268**CARBON MONOXIDE DETECTOR**

J. L. Bradspies (Tyco Labs., Inc.), S. B. Brummer (Tyco Labs., Inc.), G. L. Holleck (Tyco Labs., Inc.), and L. L. Nelsen (Tyco Labs., Inc.)

Jan. 1975

M-FS-23090

Electrochemical sensor continuously monitors levels of carbon monoxide in air. Device is based on electrochemical oxidation of carbon monoxide in detector cell. Detector can operate on 115-Vac external power source, 28-Vdc external power source, or for 200 hours on internal 12-V NiCd batteries.

B75-10007**LIGHTWEIGHT PROTECTIVE CLOTHING FOR THE SAFE HANDLING OF HIGH-INTENSITY PRESSURIZED LAMPS**

J. G. Ewashinka

Mar. 1975 See also NASA-TM-X-3147

LEWIS-12073

Five commercially available clothing materials, selected for their high cutting resistance, high strength, light weight and pliability, were tested by exposing them to exploding lamps located less than 60 cm (2 ft) away. Face shield material tested initially was commercial high-strength polycarbonate plastic.

B75-10016**THIN KAPTON POLYIMIDE FILMS VACUUM FORMED AT HIGH TEMPERATURE RETAIN THEIR SHAPE AT TEMPERATURES TO 450 K (350 F)**

K. F. Burr (Union Carbide Corp.) and G. E. Nies (Union Carbide Corp.)

Apr. 1975 See also NASA-CR-121166

LEWIS-12412

Purpose of investigation was to identify candidate materials for self-evacuating multilayer insulation systems to be used on liquid hydrogen tanks on space shuttle, which would survive

04 MATERIALS/CHEMISTRY

re-entry temperatures and mechanical and thermal cycling of one hundred flights.

B75-10023

HIGH STRENGTH FORGEABLE TANTALUM BASE ALLOY

R. W. Buckman, Jr. (Westinghouse Elec. Corp.)

May 1975 See also B66-10558; B71-10010; NASA-CR-120818; NASA-CR-120931; NASA-CR-121096; NASA-CR-134606

LEWIS-11386

Increasing tungsten content of tantalum base alloy to 12-15% level will improve high temperature creep properties of existing tantalum base alloys while retaining their excellent fabrication and welding characteristics.

B75-10027

METHOD FOR EVALUATING EFFECTIVENESS OF DRY FIRE-EXTINGUISHING CHEMICALS

R. L. Altman

Feb. 1975

ARC-10869

Apparatus used in method is commercially available, powder-deposition type oxy-acetylene torch that has been modified to provide electronically timed operations and more uniform powder flow; usual torch tips are replaced by burner head with pilot flame.

B75-10038

CURABLE POLYPHOSPHAZENES

K. A. Reynard (Horizons Res., Inc.) and A. H. Gerber (Horizons Res., Inc.)

Apr. 1975

M-FS-23134

Class of polyphosphazene polymers can be cured at moderate temperatures by action of moisture. In addition, polymers maintain flexibility when exposed to low temperatures.

B75-10042

HIGH-TEMPERATURE, REUSABLE SURFACE INSULATION SYSTEM

Innovator not given (Lockheed Missiles and Space Co.) Apr. 1975 See also NASA-CR-115582; NASA-CR-115583; NASA-CR-115712; NASA-CR-134326; NASA-CR-134327

MSC-14688

System is capable of withstanding extreme temperature environments ranging from -250 to 2300 F (116 K to 1543 K). System includes impervious, high-density, high-thermal-emittance outer coating which has low coefficient of thermal expansion matching that of insulation.

B75-10056

LOW-DENSITY POLYBENZIMIDAZOLE FOAMS FOR THERMAL INSULATION AND FIRE PROTECTION

D. A. Kourtides, J. A. Parker, C. Deland (Whittaker Corp.), and R. Milligan (Whittaker Corp.)

Apr. 1975

ARC-10823

Fire-resistant and nonsmoking foam can be prepared in desirable density range of 24 to 50 kg/cu m by controlled thermal crosslinking of polybenzimidazole prepolymer. Reproducible foams of specific density can be produced by controlling volatile content and melting temperature of prepolymer.

B75-10062

FIBER-MODIFIED POLYURETHANE FOAM FOR BALLISTIC PROTECTION

R. H. Fish, J. A. Parker, and R. W. Rosser

Apr. 1975

ARC-10714

Closed-cell, semirigid, fiber-loaded, self-extinguishing polyurethane foam material fills voids around fuel cells in aircraft. Material prevents leakage of fuel and spreading of fire in case of ballistic incendiary impact. It also protects fuel cell in case of exterior fire.

B75-10066

FABRICATION OF COMPOSITE FAN BLADES USING PMR

A-TYPE POLYIMIDE RESIN AND GRAPHITE FIBER REINFORCEMENT

W. E. Winters (TRW Equipment) and P. J. Cavano (TRW Equipment) Jul. 1975 See also B71-10442; NASA-CR-134727

LEWIS-12366

PMR polyimides are safe, easy to handle, can be processed with relatively wide process controls, and offer excellent mechanical properties, with thermo-oxidative stability. Procedures, staging and cure schedules fully dense, crackfree, dimensionally controlled, complex structure: high tip speed fan blades 1.27 cm (0.5 in) thick.

B75-10067

SURVEY OF COATINGS FOR SOLAR COLLECTORS

G. E. McDonald

Jul. 1975 See also NASA-TM-X-3136; NASA-TM-X-71730

LEWIS-12510

Optimum solar selective properties of black chrome require some tailoring of current and time for plating solution being used. Black zinc is produced from high zinc electroplate by subsequent conversion with chromate dip. Measurements have also been made of reflectance of previously known solar selective coatings of black copper and electroplated black nickel.

B75-10072

FILM MOUNTING METHOD FOR THERMOMECHANICAL ANALYSIS

H. D. Burks

May 1975

LANGLEY-11330

Mounting clamps attach polymeric film sample to thermo-mechanical analyzer. Using this technique, temperature at which polymer passes from relatively nonflexible or glasslike state to rubbery condition where it exhibits marked increase in flow properties is readily determined.

B75-10076

THERMOELECTRICALLY-COOLED QUARTZ MICROBALANCE

D. McKeown (Faraday Labs., Inc.)

May 1975

M-FS-23101

Temperature of microbalance can be maintained at ambient temperature or held at some other desired temperature. Microbalance has two-stage thermoelectric device that controls temperature of quartz crystal. Heat can be pumped to or from balance by Peltier effect.

B75-10084

DIELECTRIC FILMS IMPROVE LIFE OF POLYMERIC INSULATORS

M. Hudis and T. Wydeven

May 1975

ARC-10892

Degradation of polymeric insulators may be significantly reduced when polymer surfaces are coated with film having gradation of dielectric constants, larger where it is in contact with polymer and smaller at its exposed surface.

B75-10104

METHOD OF ATTACHING INSULATION TILES

L. J. Leger

Jun. 1975

MSC-12619

Felt pads attached underneath tiles add very little weight and retain flexibility at low temperatures. Very thin layer of room-temperature vulcanizing silicone adhesive is applied to tile. Then felt pad is attached to adhesive. Finally, tile-felt combination is attached to metal surface by means of similar adhesive layer.

B75-10113

PROCESSING FOR OBTAINING GOOD QUALITY WATER FROM SEWAGE

M. F. Humphrey

Jun. 1975

NPO-13224

Sewage treatment method incorporates aqueous slurry of activated carbon and ash. Process eliminates smell and greatly reduces amounts of solids requiring disposal. Solids consist only of sterile ash.

B75-10117**IMPROVED ION EXCHANGE MEMBRANE**

A. Rembaum, S. P. S. Yen, and E. Klein

Jun. 1975

NPO-13309

Membrane, made from commercially-available hollow fibers, is used in reverse osmosis, or dialysis. Fiber has skin layers which pass only small molecules. Macromolecules cannot penetrate skin. Fibers can also be used to remove other undesirable anions, such as phosphate, sulfate, carbonate, and uranium in form of uranium-sulfate complex.

B75-10121**IONENE TREATMENT OF SURFACES STIMULATES CELL GROWTH**

A. Rembaum, M. Ingram, A. S. Schmink, and D. E. Rounds (Pasadena Found. for Med. Res.)

Jun. 1975

NPO-13421

Number of cells adhering to walls of container can be increased by chemically pretreating walls. Polyelectrolyte, ionene, gives more effective pretreatment than any currently used chemicals.

B75-10137**TAILOR MAKING HIGH PERFORMANCE GRAPHITE FIBER REINFORCED PMR POLYIMIDES**

T. T. Serafini and R. D. Vannucci

Jul. 1975 See also B71-10442; NASA-TM-X-71616; NASA-TN-D-6877

LEWIS-12416

Studies have demonstrated versatility of PMR approach for tailor making polyimide matrix resins with wide range of flow characteristics. By simply adjusting molar ratio of reactants in monomer mixture, resins having flow values of as much as 20% can be achieved.

B75-10144**REFLECTING HEAT SHIELDS MADE OF MICROSTRUCTURED FUSED SILICA**

W. M. Congdon (Martin Marietta Corp.)

Jul. 1975 See also NASA-CR-137574

ARC-10949

Heat shields constructed from selected monodisperse distributions of high-purity fused-silica particles are efficient reflectors of visible and near-UV radiation generated in shock-layer of space probe during atmospheric entry.

B75-10157**DETERMINATION OF WATER CONTENT USING MASS SPECTROMETRY**

G. M. Wood, B. T. Upchurch (Old Dominion Coll.), and D. B. Hughes (E. I. du Pont de Nemours and Co.)

Aug. 1975

LANGLEY-11774

Mass spectrometer is used to measure small quantities of water present in different materials. System has been applied in measuring water and gases desorbed from microcircuitry insulation, can also be used with foods, polymeric materials, and organic solvents.

B75-10159**DYNAMIC DELTA METHOD FOR TRACE GAS ANALYSIS**

G. M. Wood, B. T. Upchurch (Old Dominion Coll.), and D. B. Hughes (E. I. du Pont de Nemours and Co.)

Aug. 1975

LANGLEY-11800

Method has been developed in which measurements are made only over viscous flow range, eliminating fractionation before the molecular leak and problems due to surface elution.

B75-10163**FABRICATION OF POROUS PLUGS FOR CONTROL OF LIQUID HELIUM**

L. B. Holdeman (Natl. Res. Council)

Aug. 1975

M-FS-23218

Method of producing porous copper plugs combines hydrogen annealing and oxygen annealing. Plugs have high thermal conductivity and small pore size.

B75-10174**NONGASSING NICKEL BATTERY CELL**

G. L. Juvinall, E. M. Cohn, A. A. Uchiyama, and H. A. Frank

Aug. 1975

NPO-11853

Method of constructing nickel cadmium batteries prevents excessive gas buildup and allows hermetic sealing of battery for increased service life and reduced maintenance cost.

B75-10178**IMPROVED MULTIPLE-TARGET SPUTTERING EQUIPMENT**

R. Shima

Aug. 1975

NPO-13345

Sputtering chamber has been developed with multiple target. Several film layers can be deposited without repeated evacuation and refilling. Contamination through exposure to air is eliminated.

B75-10193**RISK MANAGEMENT TECHNIQUE FOR LIQUEFIED NATURAL GAS FACILITIES**

O. H. Fedor and W. N. Parsons (Boeing Co.)

Sep. 1975 See also NASA-CR-139183

KSC-11005

Checklists have been compiled for planning, design, construction, startup and debugging, and operation of liquefied natural gas facilities. Lists include references to pertinent safety regulations. Methods described are applicable to handling of other hazardous materials.

B75-10198**HANDBOOK FOR ESTIMATING TOXIC FUEL HAZARDS**

R. K. Dumbauld (GCA Corp.), J. R. Jorkland (GCA Corp.), H. E. Cramer (GCA Corp.), and F. A. Record (GCA Corp.)

Sep. 1975

M-FS-21114

Computer program predicts, from readily available meteorological data, concentration and dosage fields downwind from ground-level and elevated sources of toxic fuel emissions. Mathematical model is applicable to hot plume rise from industrial stacks and should also be of interest to air pollution meteorologists.

B75-10200**ALUMINUM ALLOYS WITH IMPROVED STRENGTH**

R. Deiasi (Grumman Aerospace Co.) and P. Adler (Grumman Aerospace Co.)

Sep. 1975

M-FS-23239

Mechanical strength and stress corrosion of new BAR and 7050 alloys that include Zn instead of Cr have been studied and compared with those of 7075 aluminum alloy. Added mechanical strength of new alloys is attributed to finer grain size of 5 to 8 micrometers, however, susceptibility to stress corrosion attack is increased.

B75-10207**LIQUID ETHYLENE-PROPYLENE COPOLYMERS**

R. A. Rhein, J. D. Ingham, and M. F. Humphrey

Sep. 1975

NPO-13555

Oligomers are prepared by heating solid ethylene-propylene rubber in container that retains solid and permits liquid product to flow out as it is formed. Molecular weight and viscosity of liquids can be predetermined by process temperature. Copolymers have low viscosity for given molecular weight.

04 MATERIALS/CHEMISTRY

B75-10225

CHEMICAL EQUILIBRIUM OF ABLATION MATERIALS INCLUDING CONDENSED SPECIES

C. W. Stroud and K. L. Brinkley
Oct. 1975

LANGLEY-11801

Equilibrium is determined by finding chemical composition with minimum free energy. Method of steepest descent is applied to quadratic representation of free-energy surface. Solution is initiated by selecting arbitrary set of mole fractions, from which point on free-energy surface is computed.

B75-10231

SOLAR-CELL INTERCONNECTS

Innovator not given (EMR Aerospace Sciences) Oct. 1975
M-FS-23257

Study findings concluded that useful bonds can be formed with silver ribbon, silver-plated copper ribbon, and aluminum ribbon. Bonds were formed at from 300 C to 400 C and with enough contact pressure to produce some deformation of ribbon.

B75-10246

SUPERIOR HIGH TEMPERATURE PROPERTIES AVAILABLE IN DIRECTIONALLY SOLIDIFIED NICKEL-BASE EUTECTIC ALLOYS

F. D. Lemkey (United Technologies Corp.)
Nov. 1975 See also NASA-CR-2278

LEWIS-12562

Alloy has high temperature properties exceeding strength of all known superalloys. It exhibits inherent resistance to oxidation and high temperature hot corrosion.

B75-10271

INFLUENCE OF HEAT TREATMENT ON MECHANICAL PROPERTIES OF 300M STEEL

L. J. Youngblood and M. Raghavan (National Res. Council)
Oct. 1975

MSC-14792

Tests show that 300M steel should be austenitized at temperatures above 1,800 deg. F to yield best combination of strength and thickness. Tempering should be performed at temperatures between 400 and 600 deg. F

B75-10280

IMPROVED POLYELECTROLYTE FOR ION EXCHANGE FIBERS

A. Rembaum
Oct. 1975

NPO-13530

Technique increases ion exchange capacity of hollow-fiber-substrate ion exchange resins. Procedure increases number of quaternary sites on polyquaternary copolymer by 15 to 35 percent.

B75-10290

CERAMIC THERMAL PROTECTIVE COATING WITHSTANDS HOSTILE ENVIRONMENT OF ROTATING TURBINE BLADES

C. H. Liebert and S. Stecura
Dec. 1975

LEWIS-12554

Ceramic coatings have low thermal conductivity. They provide potential for increased engine performance, reduced fuel consumption, use of less costly materials or construction procedures, and increased life and durability.

B75-10293

LOW-COST THIN-LAYER SILICON SOLAR CELLS

L. T. Chu (Southern Methodist Univ.)
Dec. 1975

GSFC-12023

Two methods have been found to lower cost of polycrystalline silicon solar cells. Successive layers of polycrystalline silicon are deposited over supporting substrates of relatively inexpensive metallurgical-grade polycrystalline silicon, graphite, or steel.

B75-10308

CONTACT-EUTECTIC-LENS FABRICATION TECHNIQUE

G. F. Allen (California Univ.), S. A. Yue (California Univ.), and G. J. Yu (California Univ.)

Dec. 1975

M-FS-23275

Method enables use of crystal or semiconductor materials with selective spectral-response characteristics (ultraviolet, visible, or infrared wavelengths) in fabrication of contact lenses, reading glasses, and photographic processing equipment.

B75-10310

FLAMMABILITY STUDY OF MATERIALS IN OXYGEN ENVIRONMENTS

G. J. Austin, W. J. Bransford, and F. C. Key
Dec. 1975

M-FS-23306

Report presents flame-propagation rates and flammability ratings of 780 specimens of commercially available plastics, elastomers, coatings, fabrics, and other sheet materials. Test results are also given for over 1970 samples of most commonly used electrical harnesses, connectors, and potting compounds.

B75-10314

USING PERMEABLE MEMBRANES TO PRODUCE HYDROGEN AND OXYGEN FROM WATER

P. A. Sanders, J. R. Williams, R. W. Downs, and H. McBryar
Dec. 1975

MSC-12600

Concept may make it profitable to obtain hydrogen fuel from water. Laboratory tests have demonstrated that method enables decomposition of water several orders of magnitude beyond equilibrium state where only small amounts of free hydrogen are present.

B75-10320

A FLAME-RESISTANT MODIFIED POLYSTYRENE

W. D. Karle (Ultrasystems, Inc.), H. R. Kratze (Ultrasystems, Inc.), and L. K. Pacioren (Ultrasystems, Inc.)
Dec. 1975 See also NASA-CR-141932

MSC-14903

Several modified polystyrenes have been developed that are self-extinguishing in air. Information is included in report that also describes molding and fabrication properties, toxicology, and thermal behavior of the polymers.

B75-10321

REPAIR OF DAMAGED INSULATION TILES

D. Mui (Rockwell Intern. Corp.)

Dec. 1975 See also B75-10042; B75-10104

MSC-19549

High-temperature, reusable surface insulation tiles are repaired quickly and economically using prefabricated tile plugs.

B75-10327

COVALENT BONDING OF POLYCATIONS TO SMALL POLYMERIC PARTICLES

A. Rembaum

Dec. 1975 See also B75-10336

NPO-13487

Process produces small spherical polymeric particles which have polycations bound to them. In emulsion form, particles present large positively charged surface which is available to absorb polyanions. This property can be used in removing heparin from blood or bile acids from the digestive tract. Other anions, such as DNA and RNA, can also be removed from aqueous solutions.

B75-10336

NEW UREA-ABSORBING POLYMERS FOR ARTIFICIAL KIDNEY MACHINES

W. A. Mueller, G. C. Hsu, and H. E. Marsh
Dec. 1975 See also B75-10327

NPO-13620

Etherified polymer is made from modified cellulose derivative which is reacted with periodate. It will absorb 2 grams of urea per 100 grams of polymer. Indications are that polymers could

be used to help remove uremic wastes in artificial kidneys, or they could be administered orally as therapy for uremia.

B75-10339

RECONSTITUTED ASBESTOS MATRIX FOR FUEL CELLS

H. McBryar

Dec. 1975

MSC-12568

Method is described for reprocessing commercially available asbestos matrix stock to yield greater porosity and bubble pressure (due to increased surface tension), improved homogeneity, and greater uniformity.

05 LIFE SCIENCES

B70-10001

IMPROVED APPARATUS FOR CONTINUOUS CULTURE OF HYDROGEN-FIXING BACTERIA

POSTER, J. F. /BATTELLE MEM. INST./ LITCHFIELD, J. H. DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-1296, NASA-CR-90111

HQ-09000

Improved apparatus permits the continuous culture of *Hydrogenomonas eutropha*. System incorporates three essential subsystems - /1/ environmentally isolated culture vessel, /2/ analytical system with appropriate sensors and readout devices, /3/ control system with feedback responses to each analytical measurement.

B70-10006

A MATHEMATICAL MODEL OF THE EFFECT OF A PREDATOR ON SPECIES DIVERSITY

WESTON, C. R. YANG, J. N. DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-101669

NPO-11230

Mathematical model determines reaction between new predator and microbe competitor when the competitor is the predator's sole nutrient resource. The model utilizes differential equations to describe the interactions with the specific growth rates, and analyzes these growth rates as they are affected by population density and nutrient concentration.

B70-10030

CONTOUROGRAPH DISPLAY SYSTEM FOR MONITORING ELECTROCARDIOGRAMS

GOLDEN, D. P., JR. MAUDLIN, D. G. WOLTHUIS, R. A. GOLDEN, D. P. J/TECHNOL. INC./ DATE- OCT. 1970

MSC-13407

Electrocardiogram is displayed as a contourogram on the cathode ray tube of a variable-persistence oscilloscope. Each cycle is stacked below its predecessors giving a three dimensional effect. A major change in the signal is apparent as a change in the contourogram pattern.

B70-10107

DETECTION AND LOCATION OF METAL FRAGMENTS IN THE HUMAN BODY

BROWN, R. L. NEUSCHAEFER, R. W. DATE- FEB. 1970

M-FS-14797

Portable electronic device, based on the design of an eddy current gage, detects ferrous and nonferrous metal fragments. Device is more easily transported than X-ray equipment and does not present a radiation hazard.

B70-10125

DESIGN AND DEVELOPMENT CRITERIA FOR METAL BELLOWS

GERLACH, C. R. /SOUTHWEST RES. INST./ SCHROEDER, E. C. DATE- SEP. 1970

M-FS-20640

Experimental research describes fluid flow and the fluid-elastic mechanism causing bellows flow excitation, and aids in design of conventional bellows liner which suppresses flow-induced vibrations. Analytical models facilitate prediction of flow excitation occurrence and estimation of severity of bellows vibrations.

B70-10201

PREDICTION OF GAS LEAKAGE OF ENVIRONMENTAL CONTROL SYSTEMS

JACKSON, J. K. /DOUGLAS AIRCRAFT CO./ THOMAS, E. C. DATE- APR. 1970 REAN- SEE ALSO NASA-CR-891

HQ-10270

Mathematical models of leakage configurations and various flow theories are presented with the substantive experimental test data to provide background material for future design and failure analysis. Normal-rate leakage and emergency, high-rate leakage are considered.

B70-10253

MICROFLORA IN SOILS OF DESERT REGIONS

CAMERON, R. E. DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-101127

NPO-11215

Desert soil samples, collected using aseptic techniques, are low in organic matter and cation exchange capacity. Aerobic and microaerophilic bacteria are most abundant, next are algae and molds. Chemical and physical properties are determined by standard procedures, including the Kjeldahl method and the use of Munsell soil color charts.

B70-10254

INFLATABLE STRETCHER TO TRANSPORT PATIENTS

CLARK, C. C. /MARTIN CO./ GORDON, F. T., JR. SCHMIDT, C. B. DATE- APR. 1970

HQ-10179

Inflatable plastic bag inside strong, inflexible outer bag facilitates emergency transport of seriously burned or disabled patients. When the bag is inflated the patient is completely immobilized and cushioned from external shock. Air for breathing, temperature controls and communications may be provided by appropriate plug-in connections.

B70-10255

BIOLOGICAL HANDBOOK FOR ENGINEERS

SPON- INNOVATOR NOT GIVEN /GE/ DATE- DEC. 1970

M-FS-20349

Microbiological background information is compiled in handbook for engineers and scientists working on bio-related projects. It is intended as aid in - /1/ evaluating effects of engineering procedures on microbial life, /2/ determining effects of decontamination and sterilization on performance of overall systems, and /3/ understanding language of microbiologists.

B70-10401

AUTOMATIC OPTOMETER OPERATES WITH INFRARED TEST PATTERN

CORNWELL, T. N. /STANFORD RES. INST./ CRANE, H. D. DATE- NOV. 1970 REAN- SEE ALSO B70-10568

ARC-10095

Refractive strength of human eye is monitored by optometer that automatically and continuously images infrared test pattern onto the retina. Condition of focus of the eye at any instant is determined from optometer settings needed to maintain focus of the pattern on the retina.

B70-10420

ULTRA-FLEXIBLE BIOMEDICAL ELECTRODES AND WIRES

ROSITANO, S. A. DATE- SEP. 1970

ARC-10268

Soft, flexible electrode conforms to body contour during body motion. It is fabricated from an elastomer impregnated with a conductive powder which can be configured into any required shape, including a wire shape to connect the electrode directly to an electrical instrument or to a conventional metallic wire.

B70-10436

POST-OPERATIVE CRANIAL PRESSURE MONITORING SYSTEM

FAGER, C. A., JR. /LAHEY CLINIC/ LONG, L. E. TRENT, R. L. DATE- DEC. 1970

ERC-10336

System for monitoring of fluidic pressures in cranial cavity uses a miniaturized pressure sensing transducer, combined with suitable amplification means, a meter with scale calibrated in terms of pressures between minus 100 and plus

05 LIFE SCIENCES

900 millimeters of water, and a miniaturized chart recorder covering similar range of pressures.

B70-10447

BIOMEDICAL SENSING AND DISPLAY CONCEPT
IMPROVES BRAIN WAVE MONITORING

TRENT, R. L. DATE- DEC. 1970
ERC-10233

Concept for increasing effectiveness of biomedical sensing and display promises greater monitoring capability while lessening high skill requirements in operating personnel. New concept overcomes deficiencies of current system by employing increased number of probes and microelectronic preamplifiers.

B70-10456

ELIMINATION OF GASES AND CONTAMINATION
FROM WATER

BUCK, A. P. /TWA, INC./ DATE- SEP. 1970
KSC-10502

Filtration system with membrane type hydrophilic and hydrophobic filters gives absolute filtration with automatic venting of freed gases, and prevents backward transmission of contamination with no bacterial growth through the filters. Filter aids in degassing industrial solutions and in removing oxygen from sea water.

B70-10469

CONTROL SYSTEM FOR AN ARTIFICIAL HEART

GEBBEN, V. D. WEBB, J. A., JR. DATE- OCT. 1970
REAN- SEE ALSO NASA-TM-X-1953
LEWIS-11057

Inexpensive industrial pneumatic components are combined to produce control system to drive sac-type heart-assistance blood pump with controlled pulsatile pressure that makes pump rate of flow sensitive to venous /atrial/ pressure, while stroke is centered about set operating point and pump is synchronized with natural heart.

B70-10525

SIMPLE CHAMBER FACILITATES CHEMILUMINESCENT
DETECTION OF BACTERIA

MARTS, E. C. WILKINS, J. R. DATE- SEP. 1970
LANGLEY-10705

Test chamber enables rapid estimation of bacteria in a test sample through the reaction of luminol and an oxidant with the cytochrome C portion of certain species of bacteria. Intensity of the light emitted in the reaction is a function of the specific bacteria in the test sample.

B70-10528

TECHNIQUE FOR ANALYZING HUMAN RESPIRATORY
PROCESS

LIU, F. P. /QUANTUM-DYN., INC./ DATE- OCT. 1970
MSC-13436

Electronic system /MIRACLE 2/ places frequency and gas flow rate of the respiratory process within a common frame of reference to render them comparable and compatible with **real clock time.** Numerous measurements are accomplished accurately on a strict one-minute half-minute, breath-by-breath, or other period basis.

B70-10529

MEDICAL VEST BROADENS TREATMENT CAPABILITY

JOHNSON, G. S. /TRANS WORLD AIRLINES, INC./
DATE- OCT. 1970

KSC-10577

Universal sized vest, with specially tailored pockets designed to hold medical supplies, provides first aid/first care medical teams with broadened on-site capability. Vest is made of nylon, tough fibrous materials, and polyvinyl chloride. Design facilitates rapid donning, doffing, and adjustment.

B70-10545

COMBINATION SYRINGE PROVIDES AIR-FREE BLOOD
SAMPLES

POOL, S. L. DATE- NOV. 1970
MSC-12320

Standard syringe and spinal needle are combined in unique manner to secure air-free blood samples. Combination syringe obtains air free samples because air bubbles become insignificant when samples greater than 1 cc are drawn.

B70-10568

VISUAL FOCUS STIMULATOR AIDS IN STUDY OF
THE EYE'S FOCUSING ACTION

CORNSWEET, T. N. /STANFORD RES. INST./ CRANE, H.
D. DATE- NOV. 1970 REAN- SEE ALSO B70-10401
ARC-10049

Optical apparatus varies apparent distance of a target image from the eye by means of reflectors that are moved orthogonally to the optical axis between fixed lenses. Apparatus can be pointed at any object, test pattern, or other visual display.

B70-10619

HUMAN PERFORMANCE MEASURING DEVICE

MICHAEL, J. SCOW, J. DATE- DEC. 1970
LANGLEY-10679

Complex coordinator, consisting of operator control console, recorder, subject display panel, and limb controls, measures human performance by testing perceptual and motor skills. Device measures psychophysiological functions in drug and environmental studies, and is applicable to early detection of psychophysiological body changes.

B70-10697

BIOMEDICAL RECORDING SYSTEM

VICK, H. A. VIC, H. A. /NORTHROP CORP./
DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-101978
MSC-13653

System collects medical data directly from patients and permanently records and displays several parameters - electrocardiograph, electroencephalograph, heart rate, respiration rate, auscultatory blood pressure, leg circumference changes, body temperature, and time. Components and operation of the system are described.

B71-10024

HYDRAULICALLY OPERATED TILT TABLE

GAUSE, R. L. SPIER, R. A.
JAN. 1971

M-FS-21047

Table raises, lowers, or tilts test subject from vertical through an angle of 105 deg to a head-down position of 15 deg. Table is designed for medical center or laboratory use. Additional features are described.

B71-10047

RAPID ANALYTICAL DETERMINATION OF GLUTARALDEHYDE
CONCENTRATIONS

FRIGERIO, N. A. SHAW, M. H.
MAR. 1971

ARG-10413

Technique utilizes the iodimetric procedure which adds unknown excess of bisulfite to glutaraldehyde /GA/ then titrates unreacted bisulfite with standard iodine isotope to determine GA concentrations. Technique may interest microscopists, food researchers, biochemical or medical laboratories, and drug manufacturers.

B71-10051

BACTERIAL ADENOSINE TRIPHOSPHATE AS A MEASURE OF
URINARY TRACT INFECTION

CHAPPELLE, E. W. PICCIOLO, G. L.
MAR. 1971

GSFC-11092

Procedure detects and counts bacteria present in urine samples. Method also determines bacterial levels in other aqueous body fluids including lymph fluid, plasma, blood, spinal fluid, saliva and mucous.

B71-10059

MINIATURE GRINDER FOR SOLID SPECIMENS

HOUSER, C. P./HAYES INTERN. CORP./ PESCH, W. A.
MAR. 1971

M-FS-20005

Machine grinds fines to appropriate micron sizes with the least biological trauma and greatest degree of reproducibility. Device controls destruction of material so that recovery of microorganisms is as great as possible and protects operation and grinding products from exogenous contamination.

B71-10063
IMPROVED WAX MOLD TECHNIQUE FORMS COMPLEX PASSAGES IN
SOLID STRUCTURES
HELLBAUM, R. F. PAGE, A. D. PHILLIPS, A. R.
APR. 1971
XLA-07829

Low-cost fabricating technique produces minute, complex air passages in fluidic devices. Air jet interactions in these function as electronic and electromechanical control systems. Wax cores are fabricated without distortion by two-wax process using nonsoluble pattern-wax and water-soluble wax. Significant steps in fabrication process are discussed.

B71-10092
PRESSURIZED SUITS CAN BE FABRICATED WITH ADJUSTABLE
DIMENSIONS
KORABOWSKI, J. J./HAMILTON STD./ MARRONI, M. A., JR.
MAY 1971
MSC-12398

Root cords sewn within tube-like channels form a fabric convolute. Cord length adjusts to individual wearer's dimensions.

B71-10096
IMPROVED METHOD OF USING PARAFORMALDEHYDE AS A
DISINFECTANT
MILNER, J. F./N. AM. ROCKWELL CORP./
MAY 1971
MSC-15887

Paraformaldehyde decreases required enclosed compartment disinfectant time and temperature by vaporizing powdered material from water slurry. Fire and explosion hazard at lower temperature is reduced. Total mixture evaporation occurs at plate temperature of approximately 167 deg K below that required to vaporize powdered material.

B71-10107
MULTIMODE ERGOMETER SYSTEM
BYNUM, B. G. GAUSE, R. L. SPIER, R. A.
MAY 1971
M-FS-21044

System overcomes previous ergometer design and calibration problems including inaccurate measurements, large weight, size, and input power requirements, poor heat dissipation, high flammability, and inaccurate calibration. Device consists of lightweight, accurately controlled ergometer, restraint system, and calibration system.

B71-10124
EKG ISOLATOR
PALMER, E. RASQUIN, J. R. SMITH, H. E.
MAY 1971
M-FS-21236

Light beam transmits heartbeat signal from electrodes on patient to electrocardiograph without exposing patient to possible severe electrical shock. System provides complete isolation between patient and EKG instrumentation.

B71-10137
SPRAY MOMENTUM MEASURING SYSTEM
SHEPFIELD, E. W./TRW SYSTEMS GROUP/
MAY 1971
MSC-12305

Technique enables accurate prediction of erosion and cavitation produced by fluid spray. Method measures high velocity sprays produced by small orifices. Originally designed to determine oxidizer-injection patterns of liquid fueled rocket engines, technique is used with other liquids, or, with appropriate modification, with gases.

B71-10163
MINIATURE IMPLANTABLE INSTRUMENT MEASURES AND
TRANSMITS HEART FUNCTION DATA
LEE, R. D.
JUN. 1971
ARC-10201

Heart diameter is derived from measured transit time of 2.25 MHz ultrasonic pulse between two piezoelectric crystals attached to diametrically opposite heart surfaces. Miniature instrument

implanted in chest telemeters information to external receiver-converter. System permits continual dimensional data recording taken from awake animals during long-term experiments.

B71-10167
STABLE, INFLATABLE LIFE RAFT FOR HIGH SEAS RESCUE
OPERATIONS
BARNETT, J. H., JR. HARRISON, P. MARAK, R. RADNOSKY,
M. I.
JUN. 1971
MSC-12393

Raft is easily deployed and highly maneuverable in water. It has false bottom of water ballast containers attached to underside, making it exceptionally stable platform from which swimmers can operate. Raft is attachable to external moorings.

B71-10192
ANALYTICAL METHODS FOR BACTERIAL KINETICS STUDIES
EDWARDS, V. E. WILKE, C. R.
JUN. 1971 SEE ALSO UCBL-16398
LRL-10011

Methods utilize mathematical equations and models and specialized computer techniques. Techniques apply to food production, complex chemicals production, and polluted water purification.

B71-10200
INERTIA DIAPHRAGM PRESSURE TRANSDUCER
SEEGMILLER, H. L. B.
JUN. 1971
XAC-2981

Transducer measures gas pressure profiles in high temperature, short duration, gas flows usually found in devices where pressure pulses may have durations of few microseconds to several milliseconds. Assembly includes fluid delay line, delay chamber, and flow restrictor for equalizing steady state pressure on diaphragm's sides

B71-10202
ATTITUDE CONTROLS FOR VTOL AIRCRAFT
PAULI, F. A.
JUN. 1971 SEE ALSO NASA-TN-D-5715
XAC-8972

Systems consist of single duct system with two sets of reaction control nozzles, one linked mechanically to pilot's controls, and other set driven by electric servomotors commanded by preselected combinations of electrical signals.

B71-10241
TILT TABLE FOR ERGOMETERS AND OTHER BIOMEDICAL DEVICES
GAUSE, R. L. SPIER, R. A.
JUL. 1971
M-FS-21010

Table adjusts to any position between horizontal and vertical. Apparatus includes - floor plate, plate hinged to floor plate, for carrying ergometer, hydraulic cylinder and piston on plate sides, linking them, hydraulic system, positive stops, padded backrest and headrest, one hand controls, and constraint system.

B71-10312
INSTRUMENT DETECTS BACTERIAL LIFE FORMS
PLAKAS, C./BIOSPHERICS RES., INC./
AUG. 1971
GSFC-10972

Instrument assays enzymatic bioluminescent reaction that occurs when adenosine triphosphate /ATP/ combines with luciferase and luciferin. Module assembly minimizes need for hardware associated with reaction fluid and waste transfer. System is applicable in marine biology and aerospace and medical fields.

B71-10316
VISCOELASTIC CUSHION FOR PATIENT SUPPORT
SAUERS, D. G.
AUG. 1971
MSC-12447

Flexible container, filled with liquid, provides supportive device which conforms to patient's anatomy. Uniform cushion pressure prevents formation of decubitus ulcers, while the porous sponge substructure damps fluid movement through cushion response so that patient is not dumped when his weight shifts.

05 LIFE SCIENCES

B71-10329

A SYSTEM FOR THE AUTOMATIC MEASUREMENT AND DIGITAL DISPLAY OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURES
SCHULZE, A. E./TEX. UNIV./
AUG. 1971
MSC-13227

Basic components of system are - occluding cuff with mounted cuff microscope, cuff pump deflator, pressure transducer, preamplifier unit, electrocardiograph machine, an analog to digital converter unit, and digital display unit. System utilizes indirect auscultatory method, based on Korotkoff sounds, for measurement.

B71-10330

NEW METHOD SPEEDS BODY INERT GAS SATURATION AND UTILIZES SURFACE DECOMPRESSION
EDEL, P. O./J. AND J. MARINE DIVING CO., INC./
AUG. 1971
MSC-13543

Method reduces required saturation time from three days to six hours and also reduces required decompression time. Waiting time for planning underwater research is therefore reduced, and emergency surfacing is possible.

B71-10332

THE DETERIORATION OF INTERMEDIATE MOISTURE FOODS
LABRUZA, T. P./MIT/
AUG. 1971
MSC-13827

Deteriorative reactions are low and food quality high if intermediate moisture content of a food is held at a water activity of 0.6 to 0.75. Information is of interest to food processing and packaging industry.

B71-10355

CADMIUM PLATED STEEL CAPS SEAL ANODIZED ALUMINUM FITTINGS
PADDER, J./CHRYSLER CORP./
SEP. 1971
M-PS-20137

Cadmium prevents fracturing of hard anodic coating under torquing to system specification requirements, prevents galvanic coupling, and eliminates need for crush washers, which, though commonly used in industry, do not correct leakage problem experienced when anodized aluminum fittings and anodized aluminum cap assemblies are joined.

B71-10387

TREATMENT OF BLUEBERRIES PRIOR TO FREEZE DEHYDRATION
LARSON, R. W./WHIRLPOOL CORP./
OCT. 1971
MSC-13573

Softening blueberry skin by treatment with weak solution of sodium hydroxide prior to freeze dehydration prevents tough, chewy skins upon rehydration.

B71-10466

METABOLIC BREATH ANALYZER
PERRY, C. L.
DEC. 1971
M-PS-21415

Instrument measures metabolic breathing rate and dynamics of human beings in atmospheres ranging from normal air to 100 percent oxygen at ambient pressures from 14.7 to 3.0 psia. Measurements are made at rest or performing tasks up to maximum physical capacity under either zero or normal gravity.

B71-10475

IMPROVED VACUUM PROBE COLLECTS SURFACE-CONTAMINATION SAMPLES
ZAHRAVA, B. A./BECKTON, DICKENSON, AND CO./
DEC. 1971 SEE ALSO B68-10231 NASA-CR-111796
LANGLEY-10623

Redesigned vacuum-probe surface sampler, consisting of wand with disposable probe and filter assembly, collects specimens of fallout and handling contamination.

B71-10476

EYE POINT-OF-REGARD SYSTEM
JEX, H. R./SYSTEMS TECHNOL., INC./
DEC. 1971
ARC-10360

System measures intersection of line of sight and eye point of regard/EPR/ for a human operator in visual scanning system. Device measures two head to reference angles with EPR system and adds them with eye to head angles, yielding a dc signal proportional to picture plane coordinates.

B71-10477

MINIATURE BATTERY-OPERATED ELECTROMAGNETIC SYSTEM FOR BLOOD FLOW MEASUREMENTS
FRYER, T. B.
DEC. 1971
ARC-10362

System consisting of solid state electronics package and a pair of standard flow-transducer cuffs is useful in cardiovascular studies. Device shows good zero stability and calibrations, and low noise levels.

B71-10485

IMPROVED ORTHOPEDIC ARM JOINT
DANE, D. H.
DEC. 1971
M-PS-21611

Joint permits smooth and easy movement of disabled arm and is smaller, lighter and less expensive than previous models. Device is interchangeable and may be used on either arm at the shoulder or at the elbow.

B71-10487

MICROORGANISM SAMPLE DEVICE
REED, L. L./LOCKHEED MISSILES AND SPACE CO./ SMITH, J. M.
DEC. 1971 SEE ALSO B69-10223
LANGLEY-10258

Device, based on gel-impingement technique, collects microorganism specimens from circulating air streams. Device is useful to air pollution studies involving the collection of airborne microbial specimens.

B71-10495

REUSABLE ANAEROBIC SYSTEM FOR MICROBIOLOGICAL STUDIES - A CONCEPT
MURAWCZYK, C./MARTIN MARIETTA CORP./
DEC. 1971
MSC-13920

Simple, low cost system consists of semirigid incubation chamber with clear Teflon window, airtight zipper and internal compartments for petri dishes or microbial plates. Device interests schools, medical laboratories, and manufacturers of biological and pharmaceutical supplies.

B71-10521

DEVELOPMENT OF NON-SWEET, FLAVORED FOOD CUBES
LARSON, R. W./WHIRLPOOL CORP./
DEC. 1971
MSC-14002

Food cubes exhibit flavor and quality stability for periods of four weeks in 100 deg F environment. They are suitable for field rations, emergency rations or snacks and should interest the food processing industry.

B72-10006

COVALENT BONDING OF ANTIBODIES OF POLYSTYRENE LATEX BEADS: A CONCEPT
H. J. Tenoso (Aerojet-Gen.) and D. G. Smith (Aerojet-Gen.)
1972

MSC-13906

Technique facilitates purification of vaccines and production of immunoadsorption columns exhibiting relatively long stability. Information interests biochemists, medical researchers, and pharmaceutical manufacturers.

B72-10017

QUICK, EASY TO PREPARE FREEZE-DRIED SOUPS
R. V. Ramirez (Whirlpool Corp.) and R. W. Larson (Whirlpool Corp.)
1972
MSC-14003

Major advantages of soups are that they totally rehydrate in less than five minutes in water at approximately 150 deg F, maintain flavor and quality stability for two weeks in a 100 F environment, and remain stable for considerably longer at ambient temperatures. They are suitable for either household or field use.

**B72-10031
NEW REACTION TESTER ACCURATE WITHIN 56 MICRO-SECONDS**

H. Brown (GE)
1972

MSC-13604

Testing device measures simple and disjunctive reaction time of human subject to light stimuli. Tester consists of reaction key, logic card, panel mounted neon indicators, and interconnecting wiring. Device is used for determining reaction times of patients undergoing postoperative neurological therapy.

B72-10032

AN IMPROVED AESTHESIOMETER

D. Wright (GE) and R. Richardson (GE)
1972

MSC-13609

Biomedical tool measures cutaneous sensory perception by allowing consistent application of regular and determinable pressure to skin of the individual. Device is of relatively simple construction, inexpensive to manufacture, and easy to operate.

B72-10035

IMPLANTED TELEMETER FOR ELECTROCARDIOGRAM AND BODY TEMPERATURE

W. F. Barrows
1972

XAC-08505

Measuring system requiring one blocking oscillator to generate modulated pulse repetition rate is implantable in the bodies of small animals. Device has life of two years and transmission range of about three feet. EKG sensing unit also is used to sense electromyogram or electrooculogram of laboratory animals.

B72-10046

WEIGHT SIMULATOR

W. H. Howard and D. R. Young
1972

ARC-10100

Device applies compressive force to bone to minimize loss of bone calcium during weightlessness or bedrest. Force is applied through weights, or hydraulic, pneumatic or electrically actuated devices. Device is lightweight and easy to maintain and operate.

B72-10061

A DIFFERENTIAL ECG AMPLIFIER WITH SINGLE-ENDED OUTPUT

L. Katchis (Radionics, Inc.)
1972

ARC-10411

Three-stage amplifier is used for ECG measurements which require conversion of differential input to single-ended output. Circuit may be useful in biological telemetry for amplification of signals from specimen-implanted sensors.

B72-10062

STABILIZATION OF LACTATE DEHYDROGENASE

O. M. Friedman (Collaborative Res., Inc.)
1972 See also NASA-CR-73460

ARC-10415

Addition of substances such as dimethylsulfoxide, glycerol, and gelatin to aqueous solutions of lactate dehydrogenase maintains enzymes in stable and fully active form when stored at 2 - 6 C.

B72-10125

TIME-LAPSE CAMERA FOR MICROSCOPY

J. E. Cook (Tex. Univ.)
1972

ARC-10423

Compact, lightweight camera which advances film frames without use of conventional sprockets and slip clutches obtains time lapse photomicrographs of human cell growth in a zero-G environment over a period of about a month.

B72-10126

PROGRAMMED PHYSIOLOGICAL INFUSION SYSTEM

W. H. Howard, D. R. Young, and R. R. Adachi
1972

ARC-10447

Infusion system delivers incremental volumes from a reservoir with a piston pump at a rate that varies in time and follows the envelope of a preprogrammed curve.

B72-10168

SPACE-SUIT CARBON DIOXIDE ABSORPTION SYSTEM: A CONCEPT

R. J. Copeland (Vought Missiles and Space Co.) and B. W. Webbon (Vought Missiles and Space Co.)
1972 See also NASA-CR-114321

ARC-10546

Partial pressure of carbon dioxide within a space suit is maintained at safe levels by regenerating carbon dioxide with potassium hydroxide solution on board spacecraft or by portable units.

B72-10189

CINE RECORDING OPHTHALMOSCOPE

J. W. Fitzgerald
May 1972

ARC-10399

Camera system provides accurate photographic recording during acceleration of centrifuge and permits immediate observation of dynamic changes in retinal circulation by a closed-circuit television loop. System consists of main camera, remote control unit, and strobe power supply unit, and is used for fluorescein studies and dynamometry sequences.

B72-10193

PROJECTIONS OF SCAN PATTERNS ON HUMAN RETINA

D. H. Kelly (Stanford Res. Inst.) and H. D. Crane (Stanford Res. Inst.)

May 1972 See also NASA-CR-1121

ARC-10181

Fundus camera tracks eye movements by using camera optics with the aid of an inverted system. Camera provides a flying-spot circular scanning light source in the normal film plane and a broadband photodetector in position normally occupied by light source.

B72-10194

CARBON DIOXIDE CONCENTRATOR

C. F. Williams (TRW, Inc.) and R. G. Huebscher (TRW, Inc.)
May 1972 See also NASA-CR-73397

ARC-10245

Device passed exhaled air through electrochemical cell containing alkali metal carbonate aqueous solution, and utilized platinumized electrodes causing reaction of oxygen at cathode with water in electrolyte, producing hydroxyl ions which react with carbon dioxide to form carbonate ions.

B72-10195

AIRCRAFT OXYGEN SYSTEM

A. D. Babinsky (TRW, Inc.), R. J. Kiraly (TRW, Inc.), and R. A. Wynveen (TRW, Inc.)
May 1972

ARC-10247

Closed-loop rebreather system which includes pilot provides oxygen for use in aircraft by safe, reliable method of low weight and size and reduces expense of ground equipment. Water electrolysis generated oxygen is fed into rebreather loop which allows nitrogen elimination and water and carbon dioxide removal.

B72-10200

HEART CATHETER CABLE AND CONNECTOR

D. R. Harrison, F. L. Cota, and H. Sandler
May 1972

ARC-10406

Ultraminiature catheter cables that are stiff enough for intravenous insertion yet flexible at the tip, sterilizable, and economical are fabricated entirely from commercially available parts. Assembly includes air passageway for reference pressures and coaxial cable for transmission of signals from the tip of catheter.

B72-10203
VISUAL SENSITIVITY TESTER
 R. F. Haines, J. W. Fitzgerald, and S. A. Rositano
 May 1972 See also NASA-TN-D-6190
ARC-10329

Testing device uses closed loop film cassettes to project programmed visual stimuli on screen which the observer views through a lens making the stimuli appear to be at optical infinity. Tester is useful for determining changes in glaucomatous visual field sensitivity.

B72-10205
A DUAL-BEAM ACTINIC LIGHT SOURCE FOR PHOTOSYNTHESIS RESEARCH
 A. P. Margozi and M. E. Henderson
 May 1972
ARC-10351

Simulation of photosynthetic process in plants is accomplished by using two separate and identical optical channels that provide independently adjustable wavelengths (filters), shutter sequencing, and control intensity of illumination. In addition to experiments using electron paramagnetic resonance spectroscopy, system may be applicable to other types of research in photosynthetic field.

B72-10219
COUNTER LUNG
 A. D. Babinsky (TRW, Inc.) and R. J. Kiraly (TRW, Inc.)
 1972 See also NASA-CR-73396
ARC-10248

Counter lung, incorporated in closed-loop rebreathing system, accommodates user's breathing tidal volume so that the loop pressure is relatively constant during breathing cycles.

B72-10220
SCANNING TECHNIQUE FOR TRACKING SMALL EYE-MOVEMENTS
 D. H. Kelly (Stanford Res. Inst.) and H. D. Crane (Stanford Res. Inst.)
 1972 See also NASA-CR-114307
ARC-10488

Scanning technique images spot of blue light on fundus, measures variations in reflectance of spot and compares reflectance pattern with a stored reference pattern. Method then converts the difference from stored pattern into infrared eye motion.

B72-10224
EAR OXIMETER-TRANSDUCER MONITORS FOUR PHYSIOLOGICAL RESPONSES
 J. R. Smith, Jr.
 1972
XAC-05422

Device monitors blood oxygen saturation, blood pressure, pulse rate, and pulse-pressure curve during conditions of high stress in simulated space flight.

B72-10229
CONTINUOUS MONITOR FOR GAS RATIOS IN A MIXTURE
 S. H. Gorland and M. J. Leroy, Jr.
 May 1972 See also B67-10063; NASA-TM-X-1939
LEWIS-11095

Fluidic oscillator, incorporating piezoelectric transducer to sense molecular weight of gas mixture, is used to continuously monitor ratio of a mixture of two gases in a flowing system. Device is lightweight, compact, reliable, easy to install, and also produces a simple output signal for controller. Frequency of oscillation is measured and signal converted to ac output.

B72-10233
MERCURY IN THE ENVIRONMENT

W. Fulkerson, W. S. Lyon, W. D. Shults, and R. A. Wallace
 Dec. 1972 See also ORNL-NSF-EP-1
AEC-10048

Problems in assessing mercury concentrations in environmental materials are discussed. Data for situations involving air, water, rocks, soils, sediments, sludges, fossil fuels, plants, animals, foods, and man are drawn together and briefly evaluated. Details are provided regarding the toxicity of mercury along with tentative standards and guidelines for mercury in air, drinking water, and food.

B72-10243
QUARTZ CRYSTAL MICROBALANCE USE IN BIOLOGICAL STUDIES
 R. H. Green, J. F. Godfrey, E. G. Laue, T. M. Laue, W. W. Paik, and M. D. Wardle
 Aug. 1972
NPO-11346

Design, development, and applications of quartz crystal microbalance are discussed. Two types of crystals are used. One serves as reference and other senses changes in mass. Specific application to study of bacterial spores is described.

B72-10279
BALANCED-BELLOWS SPIROMETER
 G. G. Holden and J. R. Smith, Jr.
 Sep. 1972
XAC-01547

Compact balanced-bellows dry type spirometer was designed to be insensitive to acceleration fields along any or all coordinate axes. It provides true indication of respiratory action of test subject without need for calibration in acceleration fields.

B72-10281
IMPROVED TEMPERATURE CONTROL OF LIQUID COOLING GARMENTS
 C. W. G. Flucher (GE)
 Jun. 1972 See also NASA-CR-115122
MSC-13917

Skin and auditory meatus temperature readings supply control signal for temperature control valve in fluid temperature control system which provides increased subject comfort and responds to directly measured physiological cooling needs. System applications include medical care and thermal protection garment manufacturing.

B72-10297
SPACE SUIT MAY HAVE ORTHOTIC APPLICATIONS
 H. C. Vykukal
 Sep. 1972
ARC-10276

Application of movable joints for spacesuits to orthotic and prosthetic devices is discussed. Specifications of the joints, degrees of movement, and details of construction are described. Illustrations of the equipment are provided.

B72-10298
REAL-TIME PAIR-FEEDING OF ANIMALS
 H. A. Leon, J. P. Connolly, M. J. Hitchman, and J. E. Humbert
 Sep. 1972
ARC-10302

Automatic pair-feeding system was developed which immediately dispenses same amount of food to control animal as has been consumed by experimental animal that has free access to food. System consists of: master feeding system; slave feeding station; and control mechanism. Technique performs real time pair-feeding without attendant time lag.

B72-10301
PROTECTIVE ENCAPSULATION OF IMPLANTABLE BIOTELEMETRY UNITS
 N. C. Tombs and J. M. Pope
 Sep. 1972
ARC-10514

Development of materials for encapsulating electronic devices used in biotelemetry is discussed. Chemical resistance of materials to effects of animal fluids is described. Silicone rubber is

recommended as basic material with polymers applied to outer surface for protective coating.

B72-10303
CUTTING THIN SECTIONS OF BONE

W. W. Ashley
Sep. 1972

ARC-10555

Medical equipment for obtaining repetitive planoparallel sections of bone to study healing of bone structure under high gravity stress is described. Device consists of modified saw with diamond cutting edges. Construction of device and manner of use are explained.

B72-10334
BLOOD PRESSURE MEASUREMENT AND DISPLAY SYSTEM

A. J. Farkas
Dec. 1972

MSC-13036

System is described that employs solid state circuitry to transmit visual display of patient's blood pressure. Response of sphygmomanometer cuff and microphone provides input signals. Signals and their amplitudes, from turn-on time to turn-off time, are continuously fed to data transmitter which transmits to display device.

B72-10371
SMALL, LOW COST, ARTIFICIAL KIDNEY

A. R. Lavender and F. W. Markley
Dec. 1972

AEC-10011

Disposable hemodialyzer is described that can be used at home by non-medically trained personnel. Short lengths of semipermeable membrane tubes are arranged in parallel, supported by plastic mesh and encased in epoxy at ends. Tubes are connected to input and output blood manifolds which are separated by dialysate chamber. Daily dialysis requires only two hours or less.

B72-10391
COMPRESSION AND R-WAVE DETECTION OF ECG/VCG DATA

W. L. Hayden (TRW Systems Group), M. F. Conover (TRW Systems Group), and W. P. Bennett (TRW Systems Group)
Jul. 1972 See also NASA-CR-115177

MSC-14126; MSC-14127

Application of information theory to eliminate redundant part of electrocardiogram or vectorcardiogram is described. Operation of medical equipment to obtain three dimensional study of patient is discussed. Use of fast Fourier transform to accomplish data compression is explained.

B72-10395
MICROBIOLOGICAL SURFACE SAMPLING CART

J. R. Wilkins and S. M. Mills
Jul. 1972

LANGLEY-11069

Mobile sampling cart automatically swabs surfaces for the recovery of microorganisms. Unit operates without human involvement and provides for control of swabbing speed, rotation of cotton swab, and the pressure and angle applied to swab. Capability of reverse direction is also available. Sampling cart use is limited to flat surfaces.

B72-10402
A CONTINUOUS PHYSIOLOGICAL DATA COLLECTOR

J. C. Bush
Jul. 1972

M-FS-20835

COP-DAC system utilizes oxygen and carbon dioxide analyzers, gas-flow meter, gas breathe-through system, analog computer, and data storage system to provide actual rather than average measurements of physiological and metabolic functions.

B72-10415
SILVER STAIN FOR ELECTRON MICROSCOPY

R. L. Corbett
Sep. 1972

ARC-10661

Ammoniacal silver stain used for light microscopy was adapted advantageously for use with very thin biological sections required for electron microscopy. Silver stain can be performed in short time, has more contrast, and is especially useful for low power electron microscopy.

B72-10429
PHOSPHORUS IN LAND-WATER SYSTEMS

W. B. Bonner and T. Tamura
Dec. 1972

AEC-10049

Analyses were made to obtain information on distribution of different forms of phosphate in different environmental media, including soils, eroding material, and bottom sediment. Major emphasis was placed on determining several forms of inorganic phosphate in each medium. Results show that eroding material can transport significant quantities of phosphates from soils.

B72-10450
ULTRASONIC BONE DENSITOMETER

J. M. Hoop
Aug. 1972

M-FS-20994

Human bone density changes can be determined by a device originally developed for in-flight testing of astronauts' bones during extended space missions. Device is comparable in size, weight and power consumption to portable television set.

B72-10461
INTRAVENOUS FLUID FLOW METER CONCEPT FOR ZERO GRAVITY ENVIRONMENT

C. G. Miller (Serv. Technol. Corp.)
Aug. 1972

MSC-14123

Measuring chamber, included in infusion-set tubing, and peristaltic flow meter concept can be incorporated into flow meter that measures fluid flow rates between 100 and 600 cu cm per hour and at the same time maintains sterilization.

B72-10482
A MAGNETIC MOUSE ACTIVITY METER

J. Henry (Univ. of Southern Calif.), R. P. Rader (Univ. of Southern Calif.), and J. P. Henry
Aug. 1972

HQ-10664

Activity meter has been developed using Hall effect devices that record passage of selected groups of magnetically tagged mice. Two small permanent magnets are implanted in belly and back of selected mice and electronic circuits are activated as mice move between cages. System has advantage over tagging, detecting, and identification methods currently used.

B72-10512
ELECTRONIC CIRCUIT DETECTS LEFT VENTRICULAR EJECTION EVENTS IN CARDIOVASCULAR SYSTEM

V. D. Gebben and J. A. Webb, Jr.
Aug. 1972

LEWIS-11581

Electronic circuit processes arterial blood pressure waveform to produce discrete signals that coincide with beginning and end of left ventricular ejection. Output signals provide timing signals for computers that monitor cardiovascular systems. Circuit operates reliably for heart rates between 50 and 200 beats per minute.

B72-10522
AN EFFICIENT, SIMPLE DIALYZER

S. A. Miller (Emory Univ.)
Dec. 1972

HQ-10741

Easily assembled, efficient, countercurrent, sandwich-type barrier dialyzer was developed. Dialyzer contains six blood

05 LIFE SCIENCES

chambers that provide 500 sq cm membrane area. Design membranes are cuprammonium cellulose film. Unit performance was compared with thirteen other dialyzers.

B72-10525

A REUSABLE PREPOSITIONED ATP REACTION CHAMBER

D. G. Hoffman (Biospherics, Inc.)

Aug. 1972

HQ-10660

Luminescence biometer detects presence of life by means of light-emitting chemical reaction of luciferin and luciferase with adenosine triphosphate (ATP) that occurs in all living cells. Amount of light in reaction chamber is measured to determine presence and extent of life.

B72-10526

CARBON DIOXIDE CONCENTRATION INDICATOR

P. H. King (GE)

Aug. 1972

HQ-10582

Device will provide visual indication of concentration of carbon dioxide. It consists of small amounts of absorbent material contained in semipermeable membrane and device to detect color changes. Material will absorb quantity of carbon dioxide proportional to carbon dioxide concentration in atmosphere. Amount of absorption is indicated by color change.

B72-10531

SENSOR CAPSULE FOR DIAGNOSIS OF GASTRIC DISORDERS

J. T. Holen (McDonnell-Douglas Corp.)

Aug. 1972

HQ-10767

Motility and pH sensor capsule is developed to monitor gastric acidity, pressure, and temperature. Capsule does not interfere with digestion. Sensor is capsule which includes pH electrode, Pitran pressure transducer, and thermistor temperature sensor all potted in epoxy and enclosed in high density polyethylene sheath.

B72-10533

PATIENT'S BREATH CONTROLS COMFORT DEVICES

M. Schrader (Southwest Res. Inst.), B. Carpenter (Southwest Res. Inst.), and C. D. Nichols

Sep. 1972

LANGLEY-11138

Patient assist system for totally disabled persons was developed which permits a person, so paralyzed as to be unable to move, to activate by breathing, a call system to summon assistance, turn the page of a book, adjust his bed, or do any one of a number of other things. System consists of patient assist control and breath actuated switch.

B72-10547

STERILE CHAMBER OPERATION WITH BIO-ISOLATOR SUIT SYSTEM

R. M. Hueschen

Sep. 1972

LANGLEY-11054

Development and characteristics of protective suit to permit man to operate in biologically sterile environment are described. Construction of tunnel, flexible seals, and cooling system are analyzed. Illustration of isolation suit is provided.

B72-10557

METERED OXYGEN SUPPLY AIDS TREATMENT OF DOMESTIC SEWAGE

N. Weliky (TRW Systems Group), T. J. Hooper (TRW Systems Group), and H. P. Silverman (TRW Systems Group)

Sep. 1972 see also NASA-CR-73033

ARC-10024

Microbiological fixed-bed process was developed in which supplementary oxygen required by microbial species is supplied by electrochemical device. Rate of addition of oxygen to waste treatment process is controlled to maintain aerobic metabolism and prevent anaerobic metabolisms which produce odorous or toxic products.

B72-10559

A THERMOCOUPLE THERMODE FOR SMALL ANIMALS

B. A. Williams

Sep. 1972

ARC-10550

Thermode composed of two thin-walled stainless steel hypodermic needles and copper-constantan thermocouple or small thermistor to indicate temperature at point of perfusion is used to measure brain temperature in animals. Because of relatively small size of thermode, structural damage to brain is minimized.

B72-10579

LOUDNESS (ANNOYANCE) PREDICTION PROCEDURE FOR STEADY SOUNDS

W. L. Howes and E. A. LaSalvia

Oct. 1972 See also NASA-TM-X-2300

LEWIS-11761

Method has been devised to predict loudness level of any steady sound solely from its measured power spectrum level. Method is based on assumption that, with respect to loudness sensation, the human auditory system acts as open-loop transmission system with transmittance function determined from measured tone curves.

B72-10588

TECHNICAL MANAGEMENT TECHNIQUES FOR IDENTIFICATION AND CONTROL OF INDUSTRIAL SAFETY AND POLLUTION HAZARDS

R. Campbell, M. K. Dyer, E. G. Hoard, D. G. Little, and A. C. Taylor

Dec. 1972 See also NASA-TM-X-2567

M-FS-21883

Constructive recommendations are suggested for pollution problems from offshore energy resources industries on outer continental shelf. Technical management techniques for pollution identification and control offer possible applications to space engineering and management.

B72-10617

Dc MOTOR PROPORTIONAL CONTROL SYSTEM FOR ORTHOTIC DEVICES

H. T. Blaise and J. R. Allen (Rancho Los Amigos Hosp.)

Oct. 1972

M-FS-21573

Multi-channel proportional control system for operation of dc motors for use with externally-powered orthotic arm braces is described. Components of circuitry and principles of operation are described. Schematic diagram of control circuit is provided.

B72-10630

TISSUE HOLDER FOR EXPERIMENTAL AND DEMONSTRATION SURGERY

F. J. Kuchta, J. B. Pavlik, D. J. Vargo, and G. R. Winters

Nov. 1972

LEWIS-11755

Development of device for holding anatomical tissues during operations is discussed. Device consists of plastic dish with hemispherical recess in center to hold excised eyes. Low vacuum applied to underside of recess insures holding of part.

B72-10632

A SYSTEM FOR AUTOMATIC ANALYSIS OF BLOOD PRESSURE DATA FOR DIGITAL COMPUTER ENTRY

R. L. Miller

Nov. 1972 See also NASA-TM-X-2519

LEWIS-11751

Operation of automatic blood pressure data system is described. Analog blood pressure signal is analyzed by three separate circuits, systolic, diastolic, and cycle defect. Digital computer output is displayed on teletype paper tape punch and video screen. Illustration of system is included.

B72-10637

AUTOMATIC AGAR TRAY INOCULATION DEVICE

J. R. Wilkins and S. M. Mills

Oct. 1972

LANGLEY-11074

Automatic agar tray inoculation device is simple in design and foolproof in operation. It employs either conventional inoculating loop or cotton swab for uniform inoculation of agar media, and it allows technician to carry on with other activities while tray is being inoculated.

B72-10641

QUICK-DONNING BACKPACK HARNESS

D. F. Thomas, Jr.
Dec. 1972

LANGLEY-10102

Harness device permits user to quickly put on or take off load carried in backpack arrangement. It can be attached with one hand; has controlled deformation belt that automatically encircles user upon application of pressure; has rigid shoulder harness elements which move automatically into place; and primary attachment components that cannot be displaced while harness is in place.

B72-10642

IMPROVED BIOMEDICAL ELECTRODE

J. D. Frost, Jr. (Baylor Univ.)
Oct. 1972

MSC-13648

Newly designed electrode is prefilled, disposable, electrolyte-saturated sponge. New design permits long periods of storage without deterioration, and readiness in matter of seconds. Electrodes supply signals for electroencephalogram, electro-oculogram, and electrocardiogram.

B72-10652

SPEECH THERAPY AND VOICE RECOGNITION INSTRUMENT

J. Cohen (Ill. Univ.) and M. L. Babcock (Ill. Univ.)
Oct. 1972

HQ-10628

Characteristics of electronic circuit for examining variations in vocal excitation for diagnostic purposes and in speech recognition for determining voice patterns and pitch changes are described. Operation of the circuit is discussed and circuit diagram is provided.

B72-10653

A PROCESS YIELDS LARGE QUANTITIES OF PURE RIBOSOME SUBUNITS

M. Friedman (MIT), P. Lu (MIT), and A. Rich (MIT)
Oct. 1972

HQ-10662

Development of process for in-vitro protein synthesis from living cells followed by dissociation of ribosomes into subunits is discussed. Process depends on dialysis or use of chelating agents. Operation of process and advantages over previous methods are outlined.

B72-10657

BREATHING-METABOLIC SIMULATOR

R. G. Bartlett (IBM), C. M. Hendricks (IBM), and W. B. Morison (IBM)

Oct. 1972 See also B72-10658; B72-10659; B72-10660; B72-10661

HQ-10766

Breathing-metabolic simulator was developed to be used for evaluation of life support equipment. Apparatus simulates human breathing rate and controls temperature and humidity of exhaled air as well as its chemical composition. All functions are designed to correspond to various degrees of human response.

B72-10658

METABOLIC SIMULATION CHAMBER

R. G. Bartlett (IBM) and C. M. Hendricks (IBM)

Oct. 1972 See also B72-10657; B72-10659; B72-10660; B72-10661

HQ-10776

Metabolic simulation combustion chamber was developed as subsystem for breathing metabolic simulator. Entire system is used for evaluation of life support and resuscitation equipment. Metabolism subsystem simulates a human by consuming oxygen

and producing carbon dioxide. Basic function is to simulate human metabolic range from rest to hard work.

B72-10659

DRIVE MECHANISM FOR PRODUCTION OF SIMULATED HUMAN BREATH

R. G. Bartlett (IBM), C. M. Hendricks (IBM), J. W. Lambert (IBM), and W. B. Morison (IBM)

Dec. 1972 See also B72-10657; B72-10658; B72-10660; B72-10661

HQ-10777

Simulated breath drive mechanism was developed as subsystem to breathing metabolic simulator. Mechanism reproduces complete range of human breath rate, breath depth, and breath waveform, as well as independently controlled functional residual capacity. Mechanism was found capable of simulating various individual human breathing characteristics without any changes of parts.

B72-10660

TEMPERATURE AND HUMIDITY CONTROL OF SIMULATED HUMAN BREATH

R. G. Bartlett (IBM) and C. M. Hendricks (IBM)

Dec. 1972 See also B72-10657; B72-10658; B72-10659; B72-10661

HQ-10778

Subsystem was developed for breathing metabolic simulator which adjusts temperature and humidity of air to levels of human exhaled breath. Temperature-humidity subsystem is described, consisting of aluminum enclosure with 400 watt heat sheet glued to bottom, vertical separators, inlet connection, and check valve.

B72-10661

SIMULATED BREATH WAVEFORM CONTROL

R. G. Bartlett (IBM), C. M. Hendricks (IBM), and W. B. Morison (IBM)

Dec. 1972 See also B72-10657; B72-10658; B72-10659; B72-10660

HQ-10779

Subsystem was developed which provides twelve waveform controls to breath drive mechanism. Twelve position, magnetically actuated rotary switch is connected to one end of crankshaft drive, such that it makes one complete revolution for each simulated breath. Connections with common wired point are included in modifications made to standard motor speed controller.

B72-10690

AN EFFICIENT PREBREATHING APPARATUS FOR HUMANS DURING DECOMPRESSION

J. R. Jaax and G. P. Mills (United Aircraft Corp.)

Dec. 1972

MSC-14151

Portable prebreathing system was developed which recirculates and reconditions respiratorily exhaled oxygen. Apparatus reduces fire hazards, simplifies prebreathing procedures, and does not require extensive enclosure venting system usage.

B72-10695

IMPROVED ULTRASONIC BIOMEDICAL MEASURING APPARATUS

R. D. Lee

Dec. 1972

ARC-10597

Device for making measurements of organs in living specimens and recording movements of organs is described. System uses series of ultrasonic pulses beamed into body of animal. Reflected echo pulses are picked up by transducers and recorded. Diagram of equipment required and method of application is included.

B72-10698

IMPROVED ELECTRODES FOR SKIN CONTACTS

J. G. Castle (Ala. Univ.) and R. R. Lattanzi (Ala. Univ.)

Dec. 1972

M-FS-21926

Design is described of thick, flexible electrodes with appropriate metal surfaces which prevent unnecessary skin motion. Electrodes provide sufficient radial pressure directed toward body surface to depress skin a noticeable portion of its normal resilient thickness.

B72-10708

IMPLANTABLE DRUG THERAPY DEVICE: A CONCEPT

C. Feldstein

Dec. 1972

NPO-11934

Design is described of small, rechargeable, implantable infusor which contains fluid medicament stored under pressure and which dispenses fluid continuously through catheter. Body of infusor is covered by pliable silicone rubber sheath attached to suture pad for securing device.

B72-10730

IMPROVED MEASUREMENT OF DEPTH PERCEPTION

R. C. Fitch and D. D. Miller (Technol. Inc.)

Dec. 1972

M-FS-14133

Electromechanical system for Howard-Dolman device was developed. System is used for human depth perception measurements without tactual stimuli.

B72-10732

EFFECT OF THE METHOD OF PROCESS ON THE CONTROL OF MICROBIAL GROWTH BY WATER ACTIVITY IN FOODS

T. P. Labuzu (MIT)

Dec. 1972

MSC-14234

Two methods for preparation of intermediate moisture foods (IMF) were investigated: water absorption and water desorption technique. Results indicate that shelf stability of IMP systems might be enhanced by preparing foods by rehumidifying dehydrated foods to optimum water activity rather than drying food to reduce the water activity.

B72-10756

AUTOMATED ANALYSIS OF BLOOD PRESSURE MEASUREMENTS (KOROTKOV SOUND)

D. P. Golden (Technol., Inc.), G. W. Hoffer, and R. A. Wolthuis (Technol., Inc.)

Dec. 1972

MSC-13999

Automatic system for noninvasive measurements of arterial blood pressure is described. System uses Korotkov sound processor logic ratios to identify Korotkov sounds. Schematic diagram of system is provided to show components and method of operation.

B73-10033

MATHEMATICAL MODEL FOR PREDICTING HUMAN VERTEBRAL FRACTURE

J. V. Benedict (Technol. Inc.)

Feb. 1973 See also NASA-CR-114452

ARC-10691

Mathematical model has been constructed to predict dynamic response of tapered, curved beam columns in as much as human spine closely resembles this form. Model takes into consideration effects of impact force, mass distribution, and material properties. Solutions were verified by dynamic tests on curved, tapered, elastic polyethylene beam.

B73-10045

RAPID DETECTION OF BACTERIA IN FOODS AND BIOLOGICAL FLUIDS

R. D. Fealey and W. Renner

Feb. 1973

GSFC-11738

Simple and inexpensive apparatus, called 'redox monitoring cell,' rapidly detects presence of bacteria. Bacteria is detected by measuring drop in oxygen content in test solution. Apparatus consists of vial with two specially designed electrodes connected to sensitive voltmeter.

B73-10046

AN ECONOMICAL ARTERIAL-PULSE-WAVE TRANSDUCER

C. Kim, D. Gorelick, and W. Chen

Feb. 1973

GSFC-11531

Transducer records arterial pulses externally. Device uses thin plastic membrane which is fluid coupled to pressure sensitive transistor. Transistor is connected to amplifier which, in turn, is

connected to recorder. End section is threaded to accept suitable holder and contains pressure relief vent allowing transistor to sense only pressure levels greater than atmospheric.

B73-10048

FLEXIBLE ELECTROENCEPHALOGRAPH (EEG) HEADBAND

L. J. Raggio (N. Am. Rockwell Corp.)

Feb. 1973

LANGLEY-10927

Headband incorporates sensors which are embedded in sponges and are exposed only on surface that touches skin. Electrode sponge system is continually fed electrolyte through forced feed vacuum system. Headband may be used for EEG testing in hospitals, clinical laboratories, rest homes, and law enforcement agencies.

B73-10078

LIMITED TACTILE STIMULUS FOR PROSTHETIC HANDS

W. L. Scott (Rockwell Intern. Corp.)

Mar. 1973

M-FS-16570

Heat and pressure transducers mounted in prosthetic hand permit wearer to sense temperature and pressure to which hand is subjected.

B73-10089

ARTIFICIAL ATMOSPHERE CONTROL SYSTEM

D. R. Rebert (McDonnell Douglas Corp.), M. E. Peebles (McDonnell Douglas Corp.), J. D. Fuller and (McDonnell Douglas Corp.)

Feb. 1973

M-FS-22159

Two-gas control system has been developed which uses existing hardware. Three systems are used for control, monitoring, and safety backup. Pure oxygen will be supplied to maintain safe pressure level should something go wrong.

B73-10092

PRESERVATION OF FLAVOR IN FREEZE DRIED GREEN BEANS

C. S. Huber (Technol. Inc.), N. D. Heidelbaugh (Technol. Inc.), and D. Davis (Technol. Inc.)

Mar. 1973

JSC-14149

Before freeze drying, green beans are heated to point at which their cell structure is altered. Beans freeze dried with altered cell structure have improved rehydration properties and retain color, flavor, and texture.

B73-10099

PORTABLE LIGHT DETECTION SYSTEM FOR THE BLIND

R. L. Wilber (Southwest Res. Inst.) and B. L. Carpenter (Southwest Res. Inst.)

Feb. 1973

M-FS-22403

System can be used to detect 'ready' light on automatic cooking device, to tell if lights are on for visitors, or to tell whether it is daylight or dark outside. Device is actuated like flashlight. Light impinging on photo cell activates transistor which energizes buzzer to indicate presence of light.

B73-10156

A PRACTICAL SOLAR ENERGY HEATING AND COOLING SYSTEM

M. J. O'Neill (Lockheed Aircraft Corp.), A. J. McDaniel (Lockheed Aircraft Corp.), and W. H. Sims (Lockheed Aircraft Corp.)

May 1973

M-FS-22563

Recent study has concluded that solar-powered residential heating and cooling system is non technically and economically feasible. Proposed system provides space heating, air conditioning, and hot water. Installation costs will be greater than for conventional heating systems, but this difference will eventually be defrayed by very low operating costs.

B73-10177

POTASSIUM FOOD SUPPLEMENT

C. T. Bourland (Technol. Inc.), C. S. Huber (Technol. Inc.), C. Rambaut, and N. D. Heidelbaugh

Jun. 1973

JSC-14391

Potassium gluconate is considered best supplementary source for potassium. Gluconate consistently received highest taste rating and was indistinguishable from nonsupplemented samples. No unfavorable side effects were found during use, and none are reported in literature. Gluconate is normal intermediary metabolite that is readily adsorbed and produces no evidence of gastrointestinal ulcerations.

B73-10198

REPRODUCTIVE CELL SEPARATION: A CONCEPT

A. J. Cutaia (Battelle Mem. Inst.)

Aug. 1973

M-FS-22627

Attempt has been made to separate mammalian male (Y) bearing sperm from female (X) bearing sperm. Both types of sperm are very dependent on gravity for their direction of movement. Proposed concept suggests electrophoretic force of suitable magnitude and direction may be effective means of separating X and Y sperm under zero gravity.

B73-10220

INSULATED ECG ELECTRODES

W. M. Portnoy (Tex. Technol. Univ.) and R. M. David (Tex. Technol. Univ.)

Jun. 1973 See also NASA-CR-115530

JSC-14339

Insulated, capacitively coupled electrode does not require electrolyte paste for attachment. Other features of electrode include wide range of nontoxic material that may be employed for dielectric because of sputtering technique used. Also, electrode size is reduced because there is no need for external compensating networks with FET operational amplifier.

B73-10222

BACTERIAL CONTAMINATION MONITOR

E. Rich and N. H. MacLeod

Aug. 1973

GSFC-10879

Economical, simple, and fast method uses apparatus which detects bacteria by photography. Apparatus contains camera, film assembly, calibrated light bulb, opaque plastic plate with built-in reflecting surface and transparent window section, opaque slide, plate with chemical packages, and cover containing roller attached to handle.

B73-10229

AUTOMATIC MICROBIAL TRANSFER

J. R. Wilkins and S. M. Mills

Aug. 1973

LANGLEY-11354

Device can transfer metabolites or inhibitory agents to broth cultures of bacteria, in various stages of growth, for study. It also has application in transfer of other micro-organisms, such as yeasts, and could be useful in clinical and research laboratories. Device has been used for wide variety of purposes in experimental situations.

B73-10241

MEASURING MICRO-ORGANISM GAS PRODUCTION

J. R. Wilkins, A. O. Pearson, and S. M. Mills

Aug. 1973

LANGLEY-11326

Transducer, which senses pressure buildup, is easy to assemble and use, and rate of gas produced can be measured automatically and accurately. Method can be used in research, in clinical laboratories, and for environmental pollution studies because of its ability to detect and quantify rapidly the number of gas-producing microorganisms in water, beverages, and clinical samples.

B73-10270

IMPROVED FORMAT FOR RADIOCARDIOGRAPHIC DATA

J. Dimeff and G. Sevelius

Jul. 1973

ARC-10742

Technique involves introduction of radioactive sample into antecubital vein. Scintillation crystal mounted in collimating housing views portion of right and left hearts. As radioactive sample passes through heart, counting rate is measured by crystal and recorded on strip chart. Data is insensitive to geometric effects and other parameters.

B73-10272

NEW SYSTEM FOR BATHING BEDRIDDEN PATIENTS

J. E. Greenleaf, R. A. Staley, and P. A. Payne

Aug. 1973

ARC-10745

Multihead shower facility can be used with minimal patient handling. Waterproof curtain allows patient to bathe with his head out of shower. He can move completely inside shower to wash his face and hair. Main advantage of shower system is time saved in giving bath.

B73-10320

EIGHT-CHANNEL TELEPHONE TELEMETER SYSTEM

R. Smith (SCI Systems, Inc.) and T. Carr (SCI Systems, Inc.)

Sep. 1973 See also NASA-CR-128877

JSC-14452

Portable telemetry system uses conventional telephone link which eliminates mailing or messenger service between physician and analyst. Transmitter is used by physician; receiver is used by analyst. Each unit is inductively coupled to its respective telephone set, transmitter converting EEG into audio frequency and receiver converting this frequency back to EEG.

B73-10359

DYE LASER REMOTE SENSING OF MARINE PLANKTON

P. B. Mumola, O. Jarrett, Jr., and C. A. Brown, Jr.

Oct. 1973

LANGLEY-11382

Dye laser, emitting four wavelengths sequentially in time, has been incorporated into helicopter-borne lidar flight package, for performing studies of laser-induced fluorescence of chlorophyll A in algae. Data obtained by multicolor lidar technique can provide water-resource management with rapid-access wide-area coverage of the impact of various environmental factors for any body of water.

B73-10377

UNIFIED LIFE DETECTION SYSTEM: A CONCEPT

J. P. Martin (Martin Marietta Corp.) and M. E. Crissey (Martin Marietta Corp.)

Sep. 1973

ARC-10769

Systematic investigation of techniques and hardware which could be utilized in life detection system has resulted in identification of group of candidate concepts and selection of 'unified system'. Theme of concept permits greatest flexibility in procedural details for experiments which can be performed in individual ampules.

B73-10404

APPLICATION OF BIOLOGICAL FILTERS IN WATER TREATMENT SYSTEMS

T. L. Hurley (Chemtrac Inc.) and R. A. Bambenek (Chemtrac Inc.)

Nov. 1973 See also NASA-CR-128878

JSC-14226

Silver chloride placed on or close to barrier kills bacteria as they arrive. Dead bacteria accumulate linearly, whereas previously, live bacteria accumulated exponentially. During continuous 30-day tests, no bacteriological contamination was found downstream of filters with silver chloride added.

B73-10428

DESIGN FOR WASTE-MANAGEMENT SYSTEM

C. A. Guarneri (Grumman Aerospace Corp.), A. Reed (Grumman Aerospace Corp.), and R. Renman (Grumman Aerospace Corp.)

Dec. 1973 See also NASA-CR-128857; NASA-CR-128858

JSC-14486

05 LIFE SCIENCES

Study was made and system defined for water-recovery and solid-waste processing for low rise apartment complexes. System can be modified to conform with unique requirements of community, including hydrology, geology, and climate. Reclamation is accomplished by treatment process that features reverse-osmosis membranes.

B73-10436

SYSTEM FOR MEASURING PASSENGER REACTION TO TRANSPORTATION-VEHICLE VIBRATION

S. A. Clevenson, A. C. Dibble, T. K. Lusby, Jr., H. F. Scholl, and D. G. Stephens
Feb. 1974

LANGLEY-11353

Equipment is capable of measuring frequencies from 0 to 50 Hz and is portable, light, inexpensive, and easily adaptable to field operations. System could be used in situations where it is necessary to record simultaneously subject response to other types of physical measurement or stimuli, such as temperature, noise, or pressure.

B73-10448

MOTIVATION TECHNIQUES FOR SUPERVISION

N. D. Gray (Rockwell Intern. Corp.)
Feb. 1974

JSC-19187

Guide has been published which deals with various aspects of employee motivation. Training methods are designed to improve communication between supervisors and subordinates, to create feeling of achievement and recognition for every employee, and to retain personnel confidence in spite of some negative motivators. End result of training is reduction or prevention of errors.

B73-10474

BIODETECTION GRINDER

F. J. Beyerle
Mar. 1974

M-FS-22833

Grinder, which employs shearing action with minimum energy input, obtains desired particle sizes in materials ranging from soft plastics to hard rocks. Modified version of this grinder might be used in hospitals and biological laboratories involved with bacteriological research and testing.

B73-10477

CARDIOTACHOMETER DISPLAYS HEART RATE ON A BEAT-TO-BEAT BASIS

J. R. Rasquin, H. E. Smith, and R. A. Taylor
Mar. 1974

M-FS-20284

Electronics for this system may be chosen so that complete calculation and display may be accomplished in a few milliseconds, far less than even the fastest heartbeat interval. Accuracy may be increased, if desired, by using higher-frequency timing oscillator, although this will require large capacity registers at increased cost.

B73-10492

MINIATURIZED HAPLOSCOPE FOR TESTING BINOCULAR VISION

T. A. Decker (Baylor Coll. of Med.)
Dec. 1973

ARC-10759

Device can reproduce virtually all binocular stimulus conditions (target configuration, vergence angle, and accommodative distance) used to test binocular performance. All subsystems of electronic controls are open-loop and solid-state-controlled and, with the exception of vergence angle drive, utilize dc stepping motors as prime movers. Arrangement is also made for readouts of each variable.

B73-10494

COMPUTER SYSTEM FOR MONITORING RADIORESPIROMETRY DATA

D. D. Feller, E. D. Neville, and A. O. Cole

Dec. 1973

ARC-10784

System monitors expired breath patterns simultaneously from four small animals after they have been injected with carbon-14 substrates. It has revealed significant quantitative differences in oxidation patterns of glucose following such mild treatments of rats as a change in diet or environment.

B73-10495

INTEGRAL AIRCRAFT PASSENGER SEAT

C. C. Kubokawa

Dec. 1973 See also B72-10692

ARC-10799

Human-engineering approach was used to design integral seat which provides all the safety, comfort, and protective features that can possibly be afforded airline passengers. Results of dynamic impact testing indicated that seat can withstand and attenuate gravity loads of 21-g horizontal and 45-g vertical; by design, seat will withstand lateral g's as well.

B73-10498

FLEXIBLE TEMPERATURE PROBE FOR BIOLOGICAL SYSTEMS

P. J. Haro, C. Winget, and J. R. Beljan (Calif. Univ., Davis)
Dec. 1973

ARC-10796

Probe is sufficiently flexible so that it can be worn comfortably for long periods of time, but relatively rigid to permit easy insertion. Body and electrical leads of small thermistor are imbedded in flexible fluorosilicone matrix contained in vinyl plastic tubing.

B73-10523

DETECTING AND MEASURING METABOLIC BYPRODUCTS BY ELECTROCHEMICAL SENSING

J. R. Wilkins and G. E. Stoner (Virginia Univ.)
Mar. 1974

LANGLEY-11525

Method of detecting certain groups of bacteria is based on sensing buildup in molecular hydrogen. Apparatus is easy to assemble and use, and it has added advantage that hydrogen evolution by test micro-organisms can be measured automatically and accurately. System has been used to detect and enumerate variety of gram-negative bacteria of enterobacteriaceae group.

B74-10029

AUTOMATED MONITORING OF RECOVERED WATER QUALITY

J. E. Misselhorn (Aerojet Med. And Biol. Systems), W. H. Hartung (Aerojet Med. And Biol. Systems), and S. W. Witz (Aerojet Med. and Biol. Systems)
May 1974

LANGLEY-11203

Laboratory prototype water quality monitoring system provides automatic system for online monitoring of chemical, physical, and bacteriological properties of recovered water and for signaling malfunction in water recovery system. Monitor incorporates whenever possible commercially available sensors suitably modified.

B74-10075

PROGRAMMED-PRESSURE AIR SUPPLY FOR POSITIVE-PRESSURE BREATHING SYSTEM

S. J. Troutman, Jr. (Webb Associates) and J. F. Annis (Webb Associates)
Jun. 1974

ARC-10845

Motor-driven cam varies height of mercury column connected to loading diaphragm of pressure-regulating valve. Air supplied to open-loop, positive pressure breathing system is controlled so repetitive pressure-time profiles can be obtained during every insufflation-exhaust cycle.

B74-10080

IMPROVED HIGH VOLUME AIR SAMPLER

R. B. King
Aug. 1974

LEWIS-11644

Sampler permits size separations of particles by directing sampled air through cross-sectional area sufficiently large that air velocity is reduced to point where particles of larger size will settle out. Sampler conducts air downward and through slots around periphery of unit into relatively open interior of house.

B74-10103**COMPACT TELEMETRY PACKAGE FOR REMOTE MONITORING OF NEUTRON RESPONSES IN ANIMALS**

C. D. Baker

Aug. 1974

NPO-11887

Battery-powered telemeter includes FM transmitter and is light enough to be mounted on animal's head. Animal has complete freedom of movement while its neuron responses are transmitted to receiver in laboratory. Construction may also be applied to monitor blood pressure, body temperature, and different muscular signals.

B74-10119**THERMISTOR HOLDER FOR SKIN-TEMPERATURE MEASUREMENTS**

J. E. Greenleaf and B. A. Williams

Aug. 1974

ARC-10855

Sensing head of thermistor probe is supported in center area of plastic ring which has tabs so that it can be anchored in place by rubber bands or adhesive tapes. Device attaches probes to human subjects practically, reliably, and without affecting characteristics of skin segment being measured.

B74-10140**THERAPEUTIC HAND-EXERCISING DEVICE WITH CYCLING PRESSURE VALUE**

D. E. Barthlome

Sep. 1974

LANGLEY-11579; LANGLEY-11595

Device exercises hands of persons whose fingers are generally straight and need to be flexed inward toward palms of hands. Device is extremely simple in design, which reduces costs, and fits all hand sizes. Patient can instantly free hand from device by pulling flap free from wrist of straps.

B74-10153**IODINE GENERATOR FOR DISINFECTING RECLAIMED WATER**

R. A. Wynveen (Life Systems, Inc.), J. D. Powell (Life Systems, Inc.), and F. H. Schubert (Life Systems, Inc.)

Sep. 1974 See also NASA-CR-134219

MSC-14632

System dispenses iodine into water tank automatically in quantities varying from 0.5 to 20 ppm. It stores 180-day supply of iodine crystals, sufficient to support six people consuming water at rate of 4.5 to 13.6 kg per person per day.

B74-10155**INEXPENSIVE LIGHTWEIGHT MIRROR**

G. D. Badhwar and L. G. Fehrenkamp

Sep. 1974

MSC-14615

Aluminized Mylar film is bonded to polyurethane foam mold; Mylar is then removed, leaving highly reflective coating of aluminum on foam. Mold may be used repeatedly to make mirrors for several optical instruments. Large mirrors of almost any shape may be made singularly or in quantity.

B74-10172**FINGER RECORDING ELECTRODE SYSTEM FOR ELECTRICAL IMPEDANCE PLETHYSMOGRAPH**

L. D. Montgomery and D. L. Moody, Jr.

Sep. 1974

ARC-10816

System facilitates location of recording electrodes of impedance plethysmograph that is used for measuring flow of blood in finger segment; electrodes can be relocated accurately and volume of finger segment under study can be determined precisely.

System minimizes movement artifacts in plethysmograph trace because finger segment is held firmly.

B74-10183**ARTIFICIAL LIMB CONNECTION**

L. J. Owens

Nov. 1974

KSC-10833

Connection simplifies and eases donning and removing artificial limb; eliminates harnesses and clamps; and reduces skin pressures by allowing bone to carry all tensile and part of compressive loads between prosthesis and stump. Because connection is modular, it is easily modified to suit individual needs.

B74-10188**AUTOMATED SINGLE-SLIDE STAINING SYSTEM**

S. M. Mills and J. R. Wilkins

Nov. 1974

LANGLEY-11649

Apparatus developed to Gram-stain single slides automatically is flexible enough to accommodate other types of staining procedures. Method frees operator and eliminates necessity for subjective evaluations as to length of staining or decolorizing time.

B74-10199**NEW TOOTH ENAMEL FROM BRUSHITE CRYSTALS**

B. Rubin and J. D. Childress

Nov. 1974

ERC-10338

Appropriate nutrient gel solution could be used to precipitate brushite, which becomes hydroxyapatite, mineral found in bones and teeth. Gel can be made from sodium metasilicate and phosphoric acid, or gelatin, or other organic materials that polymerize in presence of acid to get gelatinous medium.

B74-10210**POLYMERS USED TO ABSORB FATS AND OILS: A CONCEPT**

H. E. Marsh, Jr.

Nov. 1974

NPO-11609

One approach to problem of excessive oils and fats is to develop method by which oil is absorbed into solid mixture for elimination as solid waste. Materials proposed for these purposes are cross-linked (network) polymers that have high affinity for aliphatic substances, i. e., petroleum, animal, and vegetable oils.

B74-10213**AUTOMATED DRUG IDENTIFICATION SYSTEM**

C. F. Campen, Jr.

Nov. 1974

NPO-13063

System speeds up analysis of blood and urine and is capable of identifying 100 commonly abused drugs. System includes computer that controls entire analytical process by ordering various steps in specific sequences. Computer processes data output and has readout of identified drugs.

B74-10220**SPACECRAFT OXYGEN RECOVERY SYSTEM**

P. D. Quattrone

Nov. 1974 See also B71-10203; B72-10051; B72-10074; B72-10194; B72-10195; B72-10219; B72-10246

ARC-10868

Recovery system is comprised of three integrated subsystems: electrochemical carbon dioxide concentrator which removes carbon dioxide from atmosphere, Sabatier reactor in which carbon dioxide is reduced with hydrogen to form methane and water, and static-feed water electrolysis cell to recover oxygen from water.

B74-10226**EMERGENCY DESCENT DEVICE**

R. R. Belew

Nov. 1974 See also B73-10369

DESIGN CRITERIA MONOGRAPH FOR VALVE COMPONENTS

Innovator not given Sep. 1974 See also NASA-SP-8094
LEWIS-12327

Monograph treats valve design technology problems as they were solved in successful development of flightweight operational valves for liquid rocket systems. General practices for cleaning and contamination prevention are summarized. Balance of information is arranged by topic, since detail design requirements apply to most types of valves.

**B74-10231
IMPROVED METHODS FOR COUNTING BACTERIA IN
PHYSIOLOGICAL FLUIDS**

G. L. Picciolo
 Dec. 1974 See also B71-10051
GSFC-11917

Bacterial population detection is based on detection of adenosine triphosphate (ATP), chemical present in all living matter. Amount of ATP in sample, after chemically removing all nonbacterial ATP, is directly related to bacterial population. Sensitivity is improved by concentration step; specificity is improved by lowering pH of solution.

**B74-10245
IN VIVO MEASUREMENT OF MECHANICAL IMPEDANCE
OF BONE**

D. R. Young and G. Thompson (M. B. Associates)
 Dec. 1974
ARC-10857

System of measurement provides indications of ulnar properties independent of characteristics of surrounding soft tissue and other bones. Mechanical modal approximated ulnar response so average bending rigidity could be determined to provide direct index of bone resistance to bending loading.

**B74-10249
LIQUID-COOLED LINER FOR HELMETS**

B. A. Williams and W. Elkins (Aerotherm Corp.)
 Dec. 1974
ARC-10534

Liner acts as coolant tubing, manifold, and supporting structures. Fabric of waffle-design is made of several integrated channels (or capillaries) through which coolant liquid can flow. Thin and light-weight liner can be incorporated into any type of helmet or head gear.

**B74-10278
LIQUID SAMPLE PROCESSOR**

V. J. Jahnsen and C. F. Campen, Jr.
 Jan. 1975 See also B74-10213
NPO-13136

Processor is automatic and includes series of extraction tubes packed with fibrous absorbent material of large surface area. When introduced into these tubes, liquid test samples become completely absorbed by packing material as thin film.

**B74-10289
MICRO-ORGANISM DISTRIBUTION SAMPLING FOR
BIOASSAYS**

B. A. Nelson (Martin Marietta Corp.)
 Feb. 1975
LANGLEY-10789

Purpose of sampling distribution is to characterize sample-to-sample variation so statistical tests may be applied, to estimate error due to sampling (confidence limits) and to evaluate observed differences between samples. Distribution could be used for bioassays taken in hospitals, breweries, food-processing plants, and pharmaceutical plants.

**B75-10030
ACCELERATION OF THE AGING PROCESS BY OXYGEN**

J. Miquel, R. P. Lunderen, and G. K. Bensch (Stanford Univ.)
 Feb. 1975
ARC-10928

Tissue changes induced by hyperoxia have been compared with those of normal aging. Results of investigations using male

flies prompt conclusion that normal aging, radiation syndrome, and hyperoxic injury share at least one common feature—lipid peroxidation damage to all membranes resulting in accumulation of age pigment.

**B75-10041
PORTABLE AUTOMATIC BLOOD ANALYZER**

L. P. Coleman (Orion Res., Inc.)
 Apr. 1975 See also NASA-CR-134373
MSC-14827

Analyzer employs chemical-sensing electrodes for determination of blood, gas, and ion concentrations. It is rugged, easily serviced, and comparatively simple to operate. System can analyze up to eight parameters and can be modified to measure other blood constituents including nonionic species, such as urea, glucose, and oxygen.

**B75-10045
IMPROVED EXTRACTION TECHNIQUE FOR BIOLOGICAL
FLUIDS**

V. J. Jahnsen
 Apr. 1975 See also B74-10213
NPO-13084

Liquid-liquid extraction technique speeds up separation of biological fluids into number of compounds. This eliminates agitation, emulsion formation, centrifugation, mechanical separation of phases, filtration, and other steps that have been used previously. Extraction efficiencies are equal or better than current manual liquid-liquid extraction techniques.

**B75-10051
SUBMINIATURE TRANSDUCERS FOR MEASURING
FORCES AND DEFORMATION OF HEART MUSCLE**

C. Feldstein, V. J. Osher, W. G. Lewis, H. R. Silver, and N. E. Duran
 Apr. 1975
NPO-13423; NPO-13519

Two subminiature transducers, one measuring muscle forces and one measuring muscle displacement, can be inserted into heart muscle without interfering with it. Probe, approximately 1 mm (0.04 in), causes no damage to heart muscle. Probe can be rotated to different positions to measure muscle forces from various directions.

**B75-10057
HAND TREMOR AND ACTIVITY SENSOR**

E. Konigsberg (Konigsberg Instruments, Inc.)
 Apr. 1975
ARC-10849

System detects hand tremor and activity and transmitting signals over distance of at least 3 meters to receiver system. Designed for use in studies of effect of fatigue on individual's judgement or reaction time, sensor is installed within mounting of finger-ring; no external wiring or power source is needed.

**B75-10061
ULTRASTRUCTURAL ALTERATION OF MOUSE LUNG BY
PROLONGED EXPOSURE TO MIXTURES OF HELIUM AND
OXYGEN**

A. G. Harrison and D. J. Solomon (Union Carbide Corp.)
 Apr. 1975
ARC-10929

Observed changes consist mainly of blebbing of capillary endothelium and alveolar epithelium, which is quite possibly indicative of cellular edema; also, there can be observed highly-convoluted basement membrane, alveolar debris, and increased numbers of platelets.

**B75-10077
MOBILE AUTOMATIC METABOLIC ANALYZER**

G. B. Bynum and R. J. Currie
 May 1975
M-FS-23143

Two flexible pipes, attached to face mask, are connected to spirometers in mobile cart. Inhaled air volume is measured as it is drawn from one spirometer, and exhaled air volume is measured

as it is breathed into second spirometer. Sensor is used to monitor heartbeat rate.

B75-10079
OXYGEN COCOON FOR PATIENTS UNDER INTENSIVE CARE

W. J. Maas
 May 1975

MSC-12663

Cocoon is made from Teflon film. It includes full-length, pressure zipper on top side and bottom part is rigid pad constructed of burn-resistant material. Cocoon includes oxygen supply port with exhaust port at opposite end.

B75-10083
REGULATOR FOR INTRAVENOUS FEEDING

J. Dimeff
 May 1975

ARC-10758

Float valve maintains constant level of solution, providing constant drop rate as long as solution can flow into patient's vein. Second float valve allows solution to enter vein, but prevents entry of air.

B75-10148
HIP-JOINT SIMULATOR ACCURATELY DUPLICATES HUMAN WALKING PATTERN

L. B. Johnson and A. M. Swikert
 Oct. 1975

LEWIS-12515

Device simulates all three motions of walking and provides realistic variable loading during each step. Simulator will enable laboratory evaluation of all known types of total hip prostheses.

B75-10166
HIGHLY-VISIBLE AIR-SEA RESCUE MARKER

I. M. Radnoffsky and J. Naimier
 Aug. 1975

MSC-12564

Sea marker is made from sheets of polyolefin material. Material, attached to inflatable polyethylene tube, is coated with bright dye and is effective even in choppy water.

B75-10167
MICROBIAL LOAD MONITOR

W. P. Jones (McDonnell Aircraft Co.), C. Aldridge, Jr. (McDonnell Aircraft Co.), T. J. Holen (McDonnell Aircraft Co.), D. R. Vannest (McDonnell Aircraft Co.), and F. S. Gibson
 Aug. 1975 See also NASA-CR-114922

MSC-14062

Device can detect and identify a number of medically important microorganisms in an average of approximately 8 hours. Monitor consists of cartridges containing special selective media and solid state electro-optical detectors.

B75-10168
DETERMINATION OF BONE MINERAL MASS IN VIVO

R. J. Cameron (Wisconsin Univ.) and F. P. Judy (Wisconsin Univ.)
 Aug. 1975

MSC-14276

Radiographic equipment incorporates two radiation sources, generating high-energy and low-energy beams. Recording equipment measures amount of radiation that has penetrated limb. Data are fed into computer that determines mass of the examined bone.

B75-10170
CONTINUOUS DETECTION OF VIABLE MICRO-ORGANISMS BY CHEMILUMINESCENCE

S. Witz (AMB Co.), C. Linnecke (AMB Co.), and W. Hartung (AMB Co.)

Aug. 1975

MSC-10170

System monitors quality of reclaimed water continuously and automatically. Incubated samples are compared with uninoculated ones by measuring their respective chemiluminescence.

B75-10177
IMPLANTABLE PROSTHETIC PUMP BOOSTS BLOOD PRESSURE: A CONCEPT

W. J. Fish

Aug. 1975

NPO-13626

Prosthetic pump is proposed which can improve liver blood supply by boosting blood pressure locally to the organ. Device has potential use in treatment of cirrhosis of the liver.

B75-10211
CATHETER-TIP FORCE TRANSDUCER FOR CARDIOVASCULAR RESEARCH

C. Feldstein, W. G. Lewis, H. R. Silver, and H. V. Culler
 Sep. 1975

NPO-13643

Sensor can be installed in left ventricle by means of procedures available for inserting catheter into an artery at body's extremities and manipulating it through vessel and past aortic valve. Metallic tines of device can be used as internal electrode for electrocardiogram.

B75-10253
RAPID METHOD FOR DETERMINATION OF ANTIMICROBIAL SUSCEPTIBILITIES PATTERN OF URINARY BACTERIA

L. G. Picciolo, W. L. Chapelle, J. M. Barza (New England Medical Center), L. Weinstein (New England Medical Center), A. S. Tuttle (New England Medical Center), and H. Vellend (New England Medical Center)

Oct. 1975

GSFC-12039

Method determines bacterial sensitivity to antimicrobial agents by measuring level of adenosine triphosphate remaining in the bacteria. Light emitted during reaction of sample with a mixture of luciferase and luciferin is measured.

B75-10269
ELECTROCARDIOGRAM SIGNAL ANALYZER

M. W. Portnoy (Texas Technological Univ.), H. Dirilten (Texas Technological Univ.), and E. C. Burton (Southwest Res. Institute)
 Oct. 1975

MSC-12710

Algorithm based on Taylor series expansion of Fourier transform has been developed and used for detection of cardiac arrhythmias in real-time electrocardiogram signal.

B75-10303
LIGHTWEIGHT ORTHOTIC BRACES

M. R. Baucom, E. H. Johns, and C. R. Evans
 Dec. 1975

LANGLEY-11894

Leg brace is constructed of fiber-reinforced polymer material. Composite material is stiffer, stronger, and lighter than most metals.

B75-10317
CONTROL OF NONENZYMATIC BROWNING IN INTERMEDIATE-MOISTURE FOODS

A. K. Buckle (Minnesota Univ.), P. T. Iabuzza (Minnesota Univ.), and C. H. Warmbier (Minnesota Univ.)
 Dec. 1975

MSC-14835

Series of compounds called humectants were found to decrease rate of browning when added to intermediate-moisture foods. Twenty percent level of humectant can increase shelf life of foods by factor of 5 or 6.

B75-10331
AUTOMATED MASS SPECTROMETER/ANALYSIS SYSTEM: A CONCEPT

G. H. Boettger, E. C. Giffin, J. W. Dreyer, and A. Kuppermann
 Dec. 1975

NPO-13572

System performs rapid multiple analyses of entire compound classes or individual compounds on small amounts of sample

06 MECHANICS

and reagent. Method will allow screening of large populations for metabolic disorders and establishment of effective-but-safe levels of therapeutic drugs in body fluids and tissues.

06 MECHANICS

B70-10012
SONIC IMPEDANCE TECHNIQUE DETECTS FLAWS IN
POLYURETHANE FOAM SPRAY-ON INSULATION
HARALSON, H. S. /SPACO, INC./ HAYNES, J. L.
DATE- AUG. 1970 REAN- SEE ALSO NASA-TN-X-53852
M-FS-20561
Sonic impedance testing detects voids and unbonded regions as small as 1 inch in diameter by 0.03 inch thick. Measurements are made manually or by automatic scanning and the readout is made by meter or recorder.

B70-10062
DISCHARGE COEFFICIENTS FOR THICK-PLATE
ORIFICES
METGER, G. W. RHODE, J. E. RICHARDS, H. T.
DATE- APR. 1970 REAN- SEE ALSO NASA-TN-D-5467
LEWIS-11067
Investigation enables more accurate prediction of coolant flows within internally cooled turbine blades and vanes. The data is applicable for predicting flows in complex flow passages.

B70-10093
CALCULATION OF INCOMPRESSIBLE FLUID FLOW
THROUGH CAMBERED BLADES
HSU, C. C. /HYDRONAUTICS, INC./ DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-100773, NASA-CR-102416
M-FS-20503
Conformal mapping technique yields linear, approximate solutions for calculating flow of an incompressible fluid through staggered array of cambered blades for the cases of flow with partial cavitation and supercavitation. Lift and drag coefficients, cavitation number, cavity shape, and exit flow conditions can be determined.

B70-10116
PREDICTION OF FAULTS IN COMPONENTS OF
MACHINERY IN MOTION
TATGE, R. B. /GE/ DATE- FEB. 1970 REAN- SEE
ALSO NASA-CR-99189
GSFC-10801
Mechanical vibrations of individual moving parts are sensed with piezoelectric accelerometers and measured electronically from outside the working machine.

B70-10124
METHOD OF CALCULATING BLADE-TO-BLADE PLANE
FLOW IN CENTRIFUGAL PUMP
JACKSON, E. D. /N. AM. ROCKWELL CORP./ DATE-
JUN. 1970 REAN- SEE ALSO NASA-CR-80153
M-FS-18087
Steam filament solution determines velocity distribution due to potential flow in the blade-to-blade plane of the radial impeller. This is used to determine the mass-averaged relative fluid angle, which is in turn used in an axisymmetric program to obtain steam surfaces of the assumed axisymmetric flow.

B70-10156
VOLUMETRIC CALIBRATION OF A PROPELLANT
UTILIZATION SYSTEM
LENNING, J. J. /MCDONWELL-DOUGLAS CO./ SIMKO, T.
DATE- APR. 1970
M-FS-14943
Method of calibrating capacitance-type propellant mass sensors provides meaningful mass units accurate to within one percent of the total load. Neither special propellant loading nor test firing is required. Recalibration of the system is possible without special propellant loading. This method provides increased flexibility for vehicle operation.

B70-10166
TWO-DIRECTIONAL-FLOW, AXIAL-MOTION-JOINT
FLOW LINER
BISSING, L. L. /N. AM. ROCKWELL CORP./ INNES, G.
H. DATE- APR. 1970
M-FS-16215
Flow liner eliminates high-cycle fatigue in ducts carrying cryogenic fluids. It is capable of handling two-directional, high-velocity cryogenic liquid flow with a 3-inch axial motion without binding within a 25-inch length.

B70-10225
SIMPLIFIED COMPUTATION OF COMPRESSIBLE
FLUID FLOW PARAMETERS
BEINGRABEN, H. W. /BOEING CO./ DATE- SEP. 1970
KSC-10400
Mathematical techniques analyze fluid flow through circular duct, enlarged or constricted circular duct, and across an orifice or nozzle. Using subsonic Mach number as basic flow parameter, a series of working graphs displays the variation various physical parameters in each of the flow conditions.

B70-10227
REMOVAL OF FLOWMETER BEARINGS FROM BLIND
CAVITIES
LINDQUIST, J. J. /N. AM. ROCKWELL CORP./ DATE-
APR. 1970
M-FS-18713
Bearings are removed by the application of a simple hydraulic principle using beeswax in place of a liquid.

B70-10236
STABILITY OF STRUCTURAL RINGS UNDER UNIFORMLY
DISTRIBUTED RADIAL LOADS
WILLIAMS, H. E. DATE- DEC. 1970 REAN- SEE ALSO
NASA-CR-107848
NPO-11396
Energy method analysis establishes parameters governing stability of circular rings acted upon by constant, uniformly distributed loads. Energy method is used so that nonlinear behavior of structure before buckling can be accounted for. Method affords conceptually superior basis for analyzing the axisymmetric deviation mode.

B70-10252
HEAT-RESISTANT PRESSURE PROBE WITH
HIGH-FREQUENCY RESPONSE
ROGERO, R. S. DATE- OCT. 1970
NPO-11292
Probe, having a sensor at its inner tip in intimate contact with pressure transients, measures pressure wave fluctuations through an engine's combustion chamber. A film of flexible opaque material on the face of the sensor prevents high radiation fluxes from heating the quartz crystal and thus changing the electrical characteristics.

B70-10274
THE USE OF THE CHATTER MODE IN SELF-ADAPTIVE
SYSTEMS
YASUI, S. /MIT/ DATE- APR. 1970 REAN- SEE ALSO
NASA-CR-88700
HQ-10159
Chatter mode is used advantageously if the ideal model dynamics is described by a switching function, the chatter mode is reached quickly at then sustained, the chatter frequency is reduced and any zero in the plant transfer function is cancelled.

B70-10288
CRITICAL SPEED ANALYSIS OF ROTORS
CAVICCHI, R. H. DATE- MAY 1970 REAN- SEE ALSO
NASA-TN-D-4858
LEWIS-11061
General frequency equation is developed for both forward and backward precession of rigid rotors undamped bearings on flexible foundations. As well as major critical speeds, nonsynchronous critical speeds that may result from bearing defects can be located.

B70-10293

NEW MODEL PERFORMANCE INDEX FOR ENGINEERING
DESIGN OF CONTROL SYSTEMS
SPON- INNOVATOR NOT GIVEN /MIT/ DATE- MAY 1970
HQ-10520

Performance index includes a model representing linear control-system design specifications. Based on a geometric criterion for approximation of the model by the actual system, the index can be interpreted directly in terms of the desired system response model without actually having the model's time response.

B70-10301

TECHNIQUE FOR IMPROVING HYDRODYNAMIC GYRO BEARINGS
BROUSSARD, P., JR. BURCH, J. DATE- JUN. 1970
M-FS-20764

Conical or spherical, spirally grooved grease bearings have an inclined surface which is machined inboard of the grooved surface. The indentation and inclined surface provide a reservoir for forced out lubricant, and when rotation begins, centrifugal force returns the lubricant to the grooved area.

B70-10307

FLUID INJECTION DEVICE FOR HIGH-PRESSURE SYSTEMS
COPELAND, E. J. /N. AM. ROCKWELL CORP./ WARD, J. B. DATE- JUN. 1970
MSC-15635

Screw activated device, consisting of a compressor, shielded replaceable ampules, a multiple-element rubber gland, and a specially constructed fluid line fitting, injects measured amounts of fluids into a pressurized system. It is sturdy and easily manipulated.

B70-10309

THEORY AND APPLICATION OF KALMAN FILTERING
TENG, L. /SPERRY RAND CORP./ DATE- AUG. 1970
M-FS-20491

As a unified extension of a group of related mathematical procedures, Kalman filtering is of assistance in the design of aircraft- and ground-based guidance and navigation data reduction and display systems.

B70-10350

FLEXIBLE PROTECTION FOR METAL BELLOWS
KIMBLE, K. G. /AMETEK/STRAZA/ DATE- SEP. 1970
KSC-10520

RTV silicone is used with a braided wire sheath surrounding the metal bellows in fluid transfer systems. It demonstrated best overall performance in flexibility and shock absorbing tests, high temperature, low temperature, and salt spray.

B70-10352

SINUSOIDAL-PRESSURE GENERATOR FOR TESTING DYNAMIC PRESSURE PROBES
ENGLUND, R., JR. GEBBEN, V. D. MYLAND, T. W. DATE- AUG. 1970 REAN- SEE ALSO NASA-TM-X-1981
LEWIS-11094

Generator can produce sinusoidal pressures at frequencies from 300 to 5000 Hz and peak-to-peak amplitudes up to 5.6 lbs/sq in. Amplitude and phase-angle measurements made at various frequencies are compared with measurements from a piezoelectric transducer mounted flush with the resonant tube wall.

B70-10388

EFFECT OF WALL ROUGHNESS ON LIQUID OSCILLATIONS DAMPING IN RECTANGULAR TANKS
BUGG, F. M. DATE- OCT. 1970
M-FS-20799

Tests were conducted in two rectangular glass tanks using silicon carbide grit bonded to walls to determine effect of wall roughness for damping liquid oscillations. Tests included effects of roughness height, roughness location, roughness at various values, amplitude decay, Reynolds number, and boundary layer thickness.

B70-10394

HOOP RESTRAINT ON BEAM-COLUMN BEHAVIOR IN A STIFFENED CYLINDRICAL SHELL
KINSEY, J. C. KINSEY, J. C. /N. AM. ROCKWELL CORP./ DATE- OCT. 1970
M-FS-16172

Skin's hoop restraint is determined by treating each stringer as an independent column on an elastic foundation. The equivalent radial support is simulated by elastic supports on a beam column. The formula is given for determination of the spring rates of these supports.

B70-10395

COMPARISON OF RELEASE TORQUES OF TIGHTENED BOLTS IN VACUUM AND AIR
DEMOPST, K. E. DATE- SEP. 1970 REAN- SEE ALSO NASA-TM-X-53936
M-FS-20773

Various combinations of stainless steel, mild steel, and aluminum bolt-nut couples are tightened to 60 lb-ft in partial vacuum and in air. Results are given for tests with and without two lubricants /a fluorosilicone and a sodium silicate bonded dry-film/.

B70-10398

JETTISONING SYSTEM FOR A PARACHUTE*S CANISTER
LONBORG, J. O. MACK, T. H. DATE- SEP. 1970
NPO-11236

Three-point automatically released suspension and jettisoning system operates independently of lander's power system and releases parachute on touchdown. The system is based on a ball-lock device operated by the shock of the parachute's opening and by the subsequent decay in the load on the main cord.

B70-10399

OPTIMUM STRUCTURAL DESIGN BASED ON RELIABILITY ANALYSIS
HEER, E. SHINOZUKA, M. YANG, J. N. DATE- OCT. 1970
NPO-11261

Proof-load test improves statistical confidence in the estimate of reliability, numerical examples indicate a definite advantage of the proof-load approach in terms of savings in structural weight. The cost of establishing the statistical distribution of strength of the structural material is also introduced into the cost formulation

B70-10406

EXPERIMENTAL INVESTIGATION AND ANALYSIS OF TWO SOURCES OF NOZZLE-THRUST MISALIGNMENT
DOWDY, M. W. STRAND, L. D. DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-105905
NPO-11355

Asymmetry of nozzle's throat produces oscillatory type net side-force axial profile. Using mean values of localized static pressure and Mach number, scaling laws for flat-plate supersonic flow over protrusion are applied to nozzle expansion cone irregularities to give approximate indication of perturbed-pressure profiles and induced side forces.

B70-10408

NEW STRUCTURAL APPROACH FOR DETERMINING LOAD CARRYING CAPABILITY OF FILAMENT WOUND COMPOSITE MATERIALS
ARMSTRONG, W. H. /BOEING CO./ YANG, P. B. DATE- SEP. 1970
M-FS-15121

Metal lined boron and graphite composites exhibit high strength and minimum weight, making them superior to aluminum cylindrical shell structures and to steel or aluminum constructed pressure vessels. S glass filament-epoxy resin matrix with aluminum liner is suitable for cryogenic tanks.

B70-10411

VEE-NOTCH TOOL CUTS SPECIMENS
SPIER, R. A. DATE- OCT. 1970
M-FS-20730

Triangular cutting tool uses carbide tips for notching heat-treated or abrasive materials, and alloys subjected to high structural stresses. The

06 MECHANICS

tool is rigidly mounted in a slot of mating contour to prevent deflection during cutting of tensile specimens. No other expensive machine equipment is required.

B70-10427

METHOD OF STATISTICAL FILTERING

BATTIN, R. H. /MIT/ DECKERT, J. C. FRASER, D. C. POTTER, J. E. DATE- SEP. 1970
MSC-13493

Minimal formula for bounding the cross correlation between a random forcing function and the state error when this correlation is unknown is used in optimal linear filter theory applications. Use of the bound results in overestimation of the estimation-error covariance.

B70-10431

ELIMINATION OF REDUNDANCY IN TELEMETERED DATA

VU-SON, C. /BELL TELEPHONE LABS./ DATE- SEP. 1970
HQ-10585

Procedure for estimating the intensity of a Poisson process can be readily programmed for a digital computer, and does not require an a priori probability space. Reduction of the sampling rate is possible without sacrificing significant information.

B70-10433

DYNAMIC BALANCING OF HIGH-SPEED ROTARY MACHINERY

BODENSIECK, E. J. /N. AM. ROCKWELL CORP./ PRONASKO, S. DATE- OCT. 1970
HQ-10486

Rotary dynamics test facility investigates and corrects imbalances in rotary components at speeds up to 60,000 rpm. Use of a vacuum chamber eliminates the effect of windage and facilitates the chilling of test pieces.

B70-10449

SORPTION VACUUM TRAP

BARRINGTON, A. E. CARUSO, A. J. DATE- NOV. 1970
ERC-90051

Modified sorption trap for use in high vacuum systems contains provisions for online regeneration of sorbent material. Trap is so constructed that it has a number of encapsulated resistance heaters and a valving and pumping device for removing gases from heated sorbing material. Excessive downtime is eliminated with this trap.

B70-10503

NEW DATA ACQUISITION SYSTEM RECORDS BEARING MEASUREMENTS DIRECTLY

ROSSBACH, R. J. /GE/ DATE- OCT. 1970
LEWIS-10510

Digital data acquisition system records steady state and dynamic data of bearing and shaft displacement. Elliptical orbits formed can be reconstructed and the data reduced automatically. System also reads pressures, temperatures, flows, and torque during any one data scan.

B70-10582

ANALYTICAL PREDICTION OF REVERSE BUCKLING PRESSURE FOR THIN SHELLS

MARTINDALE, D. L. /AMETEK/STRAZA/ URBANAC, C. DATE- DEC. 1970 REAN- SEE ALSO NASA-TN-3212
KSC-10515

Analytical technique is developed for prediction of reverse buckling in thin curved shells. Test data indicate technique predicts actual reverse buckling pressure within 10 percent, and should be useful for analytical prediction of reversed condition failure for problems such as explosive decomposition through vacuum failure.

B70-10598

INTERACTION OF CRIPPLING AND TORSIONAL-FLEXURAL INSTABILITIES FOR CENTRALLY LOADED COLUMNS

WALLS, J. C. /BROWN ENG. CO., INC./ DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-61287
M-PS-20556

Empirical technique predicts failure loads for centrally loaded columns with thin-walled, open

cross sections. Interaction of two failure modes is predicted by modification of the Johnson-Euler equation.

B70-10623

OPTIMUM MULTI-IMPULSE RENDEZVOUS PROGRAM

GLANDORF, D. R. /LOCKHEED ELECTRON, CO./ ONLEY, A. G. ROZENDAAL, H. L. DATE- DEC. 1970
MSC-13139

OMIRPROGRAM determines optimal n-impulse rendezvous trajectories under the restrictions of two-body motion in free space. Lawden's primer vector theory is applied to determine optimum number of midcourse impulse applications. Global optimality is not guaranteed.

B70-10626

TECHNIQUE FOR EVALUATING MULTIPLE PROBABILITY OCCURRENCES /TEMPO/

MEZZACAPPA, M. A. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970
M-PS-14333

Technique is described for adjustment of engineering response information by broadening the application of statistical subjective stimuli theory. The study is specifically concerned with a mathematical evaluation of the expected probability of relative occurrence which can be identified by comparison rating techniques.

B70-10627

SIMPLE DATA-SMOOTHING AND NOISE-SUPPRESSION TECHNIQUE

DUTY, R. L. /IBM/ DATE- NOV. 1970
M-PS-20803

Algorithm, based on the Borel method of summing divergent sequences, is used for smoothing noisy data where knowledge of frequency content is not required. Technique's effectiveness is demonstrated by a series of graphs.

B70-10647

SYSTEMS APPROACH PROVIDES MANAGEMENT CONTROL OF COMPLEX PROGRAMS

DUDEK, E. F., JR. /N. AM. ROCKWELL CORP./ MC CARTHY, J. F., JR. DATE- DEC. 1970
M-PS-20791

Integrated program management process provides management visual assistance through three interrelated charts - system model that identifies each function to be performed, matrix that identifies personnel responsibilities for these functions, process chart that breaks down the functions into discrete tasks.

B70-10657

AUTOMATIC, COMPUTERIZED TESTING OF BOLTS

CARLUCCI, J., JR. LOBB, V. B. STOLLER, F. W. DATE- DEC. 1970
NPO-11090

System for testing bolts with various platings, lubricants, nuts, and tightening procedures tests 200 fasteners, and processes and summarizes the results, within one month. System measures input torque, nut rotation, bolt clamping force, bolt shank twist, and bolt elongation, data is printed in report form. Test apparatus is described.

B70-10695

HYPERBOLA-GENERATOR FOR LOCATION OF APERIODIC EVENTS

PAUCKER, H. R. SPITZER, C. R. VANN, D. S. DATE- DEC. 1970
LANGLEY-10312

Plotting device, when used in conjunction with three or more detectors and local receiver and recorder, can quickly pinpoint location of any aperiodic event. Operation requires minimal training and is readily adapted to the field. Mechanical error in device prototype is less than or equal to 3 percent.

B70-10710

A REPORT OF ADVANCEMENTS IN STRUCTURAL DYNAMIC TECHNOLOGY RESULTING FROM SATURN 5 PROGRAMS

SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-1539, NASA-CR-1540
LANGLEY-10684

Two volume report on practical aspects of structural dynamic analysis in Saturn 5 program is described. Volume 1 is oriented toward program managers of future structural dynamic programs. Volume 2, oriented toward technical leaders of programs, discusses methods and procedures used in Saturn 5 program.

B70-10712

A NEW METHOD FOR MEASURING SLIPPERINESS OF AIRPORT RUNWAYS AND OTHER PAVED SURFACES
HORNE, W. B. YAGER, T. J. DATE- DEC. 1970
LANGLEY-10795

Aircraft stopping distances on wet runways are accurately predicted by measurements taken with a conventional automobile equipped with diagonal braking system and simple instrumentation for recording stopping distances.

B70-10715

STRAIN GAGE INSTALLATION MANUAL
NICHOLS, D. W. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970
M-PS-18822

Detailed specifications for installing laboratory strain gages are compiled into handy reference manual that provides laboratory technicians with ready source of instructions on techniques and procedures for cementing a wide variety of strain gages onto most of the commonly encountered engineering materials.

B70-10725

A STUDY OF NACA AND NASA PUBLISHED INFORMATION OF PERTINENCE IN THE DESIGN OF LIGHT AIRCRAFT
SPON- INNOVATOR NOT GIVEN /N. C. STATE UNIV./ DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-1484, NASA-CR-1485, NASA-CR-1486
LANGLEY-10778

Three volume report contains NACA/NASA generated literature pertinent to the design of light aircraft. Information covers structural design, propulsion subsystems, landing gear loads, flutter, performance calculation procedures, and high horsepower propellers. Major emphasis is on reports produced prior to 1962.

B71-10044

PREVENTION OF DAMAGE TO DELICATE CONNECTORS DURING MOUNTING OF HEAVY ENGINES FOR TESTING
HENDRICKSON, R. J./AEROJET-GEN. CORP./ MAR. 1971
NUC-10322

Air-bearing-pad principle, combined with monitoring system of the air-bearing force, prevents damage between electrical and mechanical connectors joining a large engine system to the test stand during remote mating. Pad provides a cushion between engine and test stand.

B71-10074

PREDICTION OF WINDAGE POWER LOSS IN ALTERNATORS
VHANCIK, J. E.
APR. 1971 SEE ALSO NASA-TN-D-4849
LEWIS-10939

Simplified equations and constants, based on laminar and turbulent flow theory between parallel plates, estimate windage loss in rotating electrical machinery. Comparison of calculated results and experimental data for smooth cylindrical rotor and slotted alternator yields 7 percent maximum variation between calculated and experimental data.

B71-10093

PIPE INSTALLATION TECHNIQUE AVOIDS DISTURBING WORK AREAS
MALYSZ, E. P./N. AM. ROCKWELL CORP./ MAY 1971
MSC-15581

Pipe supports for 0.305 m diameter pipes are pre-hung and an opening is cut in exterior wall of the building. Pipes are welded outside the building and then rolled through the opening into the final location. Technique affords cost and time savings.

B71-10094

DETERMINATION OF GAS VOLUME TRAPPED IN A CLOSED FLUID SYSTEM

HUNTER, W. P./N. AM. ROCKWELL CORP./ JOLLEY, J. E.
MAY 1971
MSC-15685

Technique involves extracting known volume of fluid and measuring system before and after extraction, volume of entrapped gas is then computed. Formula derived from ideal gas laws is basis of this method. Technique is applicable to thermodynamic cycles and hydraulic systems.

B71-10095

UNIFIED HATCH SYSTEM
HART, R. J./N. AM. ROCKWELL CORP./ WALKOVER, L. J. ZOSKY, E. W.
MAY 1971
MSC-15813

Special hatch sealing mechanism design increases safety, reliability, and convenience. Adaptations are possible for oceanographic and high-speed aircraft design, or for any system where quick-opening pressure hatch is required. In normal mode, hatching mechanism is manually operated from either side.

B71-10103

METHYL ALCOHOL USED AS PENETRANT INSPECTION MEDIUM FOR POROUS MATERIALS
HENDRON, J. A./AEROJET-GEN. CORP./ MAY 1971
NUC-10419

Porous material thoroughly wetted with alcohol shows persistent wet line or area at locations of cracks or porosity. Inspection is qualitative and repeatable, but is used quantitatively with select samples to grade density variations in graphite blocks. Photography is employed to achieve permanent record of results.

B71-10109

THE HEAT PIPE - A SIMPLE, VERSATILE, EFFICIENT HEAT TRANSFER TOOL
SCHWARTZ, J.
MAY 1971
NPO-11598

Heat pipe transports large quantities of heat from source to sink with only small temperature drop. Thermal energy is transferred to and from heat pipe by any combination of conduction, convection, or radiation heat transfer. Pipes transport energy from open flames, nuclear sources, and electronic equipment.

B71-10129

LOCATING TUBE BLOCKAGE THAT X-RAY CANNOT DETECT
HENDRON, J. A./AEROJET-GEN. CORP./ MAY 1971
NUC-10386

Alternate choices to X-ray use in detecting foreign materials in metal assemblies are available, including negative radiography, neutron radiography, liquid-crystal inspection and ultrasonics. Advantages and disadvantages of each method are given. Report is valuable in testings and inspections, including heat exchangers and piping systems.

B71-10150

PREDICTING VIBRATIONAL FAILURE OF FLEXIBLE DUCTING
HENRY, R. H./N. AM. ROCKWELL CORP./ JUN. 1971
M-PS-16750

Technique applies to liquid or gas transfer through flexible ducting and proves valuable in high velocity fluid flow cases. Fluid mechanism responsible for free bellows vibrational excitation also causes flexible hose oscillation. Static pressure stress influences flexible ducting fatigue life and is considered separately.

B71-10156

INSTRUCTION MANUALS FOR RADIOGRAPHIC NONDESTRUCTIVE TESTING
INNOVATOR NOT GIVEN /GEN. DYN./CONVAIR/ JUN. 1971
SEE ALSO B67-10374, B68-10391, B69-10108, B69-10278, NASA-CR-61212, NASA-CR-61213, NASA-CR-61214, NASA-CR-61215, NASA-CR-61216, NASA-CR-61231
M-PS-21350

Six new handbooks on the fundamentals of nondestructive test techniques supply recent information for instructing inspectors and

06 MECHANICS

technicians, and can be used effectively in shops or laboratories, technical schools, or home study programs.

B71-10183

GENERALIZED SAFETY EQUATION - A CONCEPT

HANO, G./IBM CORP./

JUN. 1971

M-FS-20522

Concept provides definition of relationship between safety and reliability, personnel safety measurement, and equipment safety evaluation. Safety systems cope with single or combined risks. Cost and effectiveness of alternate hypothetical safety systems are estimated and used as basis for final system design.

B71-10187

PATTERN RECOGNITION TECHNIQUE

HONG, J. P.

JUN. 1971

NPO-11337

Technique operates regardless of pattern rotation, translation or magnification and successfully detects out-of-register patterns. It improves accuracy and reduces cost of various optical character recognition devices and page readers and provides data input to computer.

B71-10188

PEAK STRUCTURAL RESPONSE TO NONSTATIONARY RANDOM EXCITATIONS

SHINOZUKA, M. YANG, J.-N.

JUN. 1971

NPO-11617

Study establishes distribution function of peak response values, based on frequency interpretation. Excitations considered include impact loading on landing gears and aircraft gust loading. Because of relative severity of excitations, prediction of fatigue and maximum response characteristics is important part of task of structural analysis and design.

B71-10189

ANALYTICAL PROCEDURE FOR ESTIMATING RELIABILITY OF RANDOMLY EXCITED STRUCTURES

HEER, E. YANG, J.-N.

JUN. 1971

NPO-11618

Analysis considers statistical variation of material strength and interactions between catastrophic and failure fatigue modes. Procedure employs concepts of fracture mechanics and extreme point processes associated with stationary narrow-band random vibrations.

B71-10194

PREDICTING SERVICE LIFE MARGINS

EGAN, G. F./N. AM. ROCKWELL CORP./

JUN. 1971

M-FS-24015

Margins are developed for equipment susceptible to malfunction due to excessive time or operation cycles, and for identifying limited life equipment so monitoring and replacing is accomplished before hardware failure. Method applies to hardware where design service is established and where reasonable expected usage prediction is made.

B71-10196

LIMITED LIFE ITEM MANAGEMENT

EAGLEN, R. L./N. AM. ROCKWELL CORP./

JUN. 1971

M-FS-24020

Plans are available for age-sensitive hardware management. Control plan identifies shelf life or age control requirements for materials considered age sensitive, use sensitive, or time service or shelf life controlled items, and describes methods of arriving at age controls through adherence to detailed specifications.

B71-10227

ULTRASONIC SCANNING SYSTEM FOR IN-PLACE INSPECTION OF BRAZED-TUBE JOINTS

HARALSON, H. S./SPACO, INC./ HAYNES, J. L. WAGES, C. G.

JUL. 1971 SEE ALSO NASA-TM-X-64558

M-FS-21166

System detects defects of .051 cm in diameter and larger. System incorporates scanning head assembly including boot enclosed transducer, slip ring assembly, drive mechanism, and servotransmitter. Ultrasonic flaw detector, prototype recorder, and special recorder complete system.

B71-10254

WIND TUNNEL INVESTIGATIONS AT TRANSONIC MACH NUMBERS

ROBERTSON, J. E./WYLE LABS./

JUL. 1971

M-FS-20895

Investigation utilizes static and fluctuating pressure measurements and oil flow visualization techniques to analyze perturbed flow environments of three-dimensional protuberances and the surrounding structure. Significant findings are given.

B71-10266

CRITERIA FOR VIBRATION TESTING

CRONIN, D. L./TRW SYSTEMS GROUP/

AUG. 1971

GSFC-10737

Systematic application of response spectral analysis and other analyses determine damping sensitivity of flight environment and candidate laboratory tests. Computerized comparison is made between response spectrum for flight environment, or enveloping spectra for collection of flight events, and response spectrum for candidate laboratory test.

B71-10270

METHOD FOR DETERMINING FAILURE POTENTIAL OF PRESSURE VESSELS

RAWE, R. A./MCDONNELL DOUGLAS CORP./ SCHWAB, D. E.

AUG. 1971

M-FS-20564

Method provides quantitative estimation of critical vessel wall and crack parameters that must not be exceeded to ensure against failure of pressurized vessels.

B71-10271

QUALIFICATIONS AND CERTIFICATION OF NONDESTRUCTIVE TESTING PERSONNEL

KIRK, M. K.

AUG. 1971 SEE ALSO B67-10374, B68-10391, B69-10108,

B69-10278

M-FS-20850

Personnel handbook states criteria for test methods including radiation, ultrasonics, eddy current, liquid penetrant, and magnetic particle. Subject categories are thoroughly defined and substructured.

B71-10281

INFORMATION QUALITY-CONTROL MODEL

VINCENT, D. A.

AUG. 1971

NPO-11431

Model serves as graphic tool for estimating complete product objectives from limited input information, and is applied to cost estimations, product-quality evaluations, and effectiveness measurements for manpower resources allocation. Six product quality levels are defined.

B71-10327

STRUCTURAL BEHAVIOR OF TAPERED INFLATED FABRIC

CYLINDERS UNDER VARIOUS LOADING CONDITIONS

KOVALEVSKY, L./N. AM. ROCKWELL CORP./ RISK, F. L.

AUG. 1971

MSC-15317

Method analyzes inflatable structures and considers axial loads, torsional moment, and internal pressure. Behavior depends on anisotropic nature and large deflection stress-strain characteristics of fabric material. Behavior equations for pressurized cylinder loaded in torsion are developed.

B71-10337

IMPROVED SMOKE GENERATOR FOR LOW-SPEED WIND TUNNELS

TURNER, T. R.

SEP. 1971

LANGLEY-10885

Device incorporates kerosene vaporization concept by electrically heating tubes that carry kerosene down the probe, smoke is emitted from orifices at probe's end. Neither the low concentration of kerosene vapor nor the 50 vdc power supply constitutes a safety hazard.

B71-10348

ACCELERATED BATTERY-LIFE TESTING - A CONCEPT
MC CALLUM, J./BATTELLE MEM. INST./ THOMAS, R. E.
SEP. 1971 SEE ALSO NASA-CR-97935, NASA-CR-107114
GSPC-11085

Test program, employing empirical, statistical and physical methods, determines service life and failure probabilities of electrochemical cells and batteries, and is applicable to testing mechanical, electrical, and chemical devices. Data obtained aids long-term performance prediction of battery or cell.

B71-10397

EQUIPMENT AND PROCEDURE FOR DETERMINING THE ELASTIC MODULUS OF CARBON-EPOXY COMPOSITES
BROWN, W. L./MARTIN MARIETTA CORP./ FELDMAN, A.
PENNING, F. A. STANG, D. A.
OCT. 1971

LEWIS-11116

Method includes test device design and fabrication and standard Naval Ordnance Laboratory /NOL/ test ring as the test specimen. Technique provides accurate measurement of NOL ring elastic modulus, and adapts for use with fiber glass epoxy/rings.

B71-10405

COMBINED HIGH VACUUM/HIGH FREQUENCY FATIGUE TESTER
HONEYCUTT, C. R./TRW, INC./ MARTIN, T. F.
OCT. 1971 SEE ALSO NASA-CR-72241
LEWIS-11210

Apparatus permits application of significantly greater number of cycles or equivalent number of cycles in shorter time than conventional fatigue test machines. Environment eliminates problems associated with high temperature oxidation and with sensitivity of refractory alloy behavior to atmospheric contamination.

B71-10407

LOW COST, LOGARITHMIC MASS FLOW COMPUTER
DOLCE, J. L. GABY, J. D., JR. NOGA, D. F. WATSON, J. E.
NOV. 1971
LEWIS-11001

Computer solves the equation relating gas flow through a nozzle, venturi, or orifice to the absolute temperature, absolute pressure, and differential pressure of the fluid. Inexpensive method has high frequency response and provides true analog output.

B71-10409

SIMPLE TWO-SPEED TAPE TRANSPORT DRIVE
CLURMAN, S. P./RCA/ STITLEY, G. L.
NOV. 1971 SEE ALSO NASA-CR-112400
GSPC-10981

High data rate storage system B tape transport fits to existing hysteresis motor thus reducing flutter, lowering assembly cost, simplifying assembly process and increasing reliability. Motor may be used on any tape recorder or similar device having two speed ratio of up to 32 to 1.

B71-10430

SERVO-CONTROLLED DECOUPLER ELIMINATES OSCILLATIONS IN FLUID FLOW - A CONCEPT
FENWICK, J. R./N. AM. ROCKWELL CORP./
NOV. 1971
H-PS-18793

Active control technique, using accelerometer-controlled servovalve to operate a compensating piston, effectively eliminates pressure fluctuations due to longitudinal structural vibration within a relatively long bandwidth.

B71-10446

AXISYMMETRIC AND CYLINDRICAL ISOSTABLE STRUCTURES - A CONCEPT
HEDGEPEETH, J. M./ASTRO RES. CORP./ PREISWICK, P. SCHEURCH, H. U.
NOV. 1971
NPO-12049

Mathematical formulation, suitable for analytical design of structural networks with uniform local stability, yields idealized solutions for specific two-family networks.

B71-10507

NONDESTRUCTIVE TESTING OF BOND INTEGRITY IN FOAM INSULATION/ALUMINUM COMPOSITES
BANKSTON, B. F. CLOTFELTER, W. M. DUREN, P. C.
DEC. 1971 SEE ALSO NASA-TN-X-53940
H-PS-20786

Nondestructive test methods are used for evaluating bond integrity of low-density polyurethane spray-on foam used as cryogenic insulation on aluminum alloy surfaces.

B71-10513

OPTICAL INSPECTION TOOL FOR INTERIOR SURFACES OF FLUID LINES

HITCHELL, D. K.

DEC. 1971

H-PS-15162

Specialized tool enables visual inspection of interior bore surfaces of pipe lines having sharp bends and blind runs. Adjustable, hinged optical head permits viewing of bore surfaces at angles from 0 deg to 115 deg to the principal axis of the sight tube.

B71-10514

METHOD FOR CALCULATING THE STRESSES IN PRESSURE VESSELS

SKOGH, J./LOCKHEED MISSILES AND SPACE CO./

DEC. 1971

MSC-13515

Calculation of elastic and plastic stresses at axisymmetric discontinuities is based on nonlinear elastic theory incorporating pressure coupling effects.

B71-10528

SPLIT STATOR VANE ROW FOR FANS AND COMPRESSORS

VOLK, L. J./GE/

DEC. 1971 SEE ALSO NASA-CR-1493

ARC-10288

Operating noise of fans is reduced by adding part span vanes to vane row of stator, reducing the number of full span vanes and maintaining a vane-to-blade ratio of about 2 to 1.

B72-10009

ELECTRODYNAMIC ACTUATORS FOR ROCKET ENGINE VALVES

O. Fiet (TRW Systems Group) and D. Doshi (TRW Systems Group)

1972

ARC-10486

Actuators, employed in acoustic loudspeakers, operate liquid rocket engine valves by replacing light paper cones with flexible metal diaphragms. Comparative analysis indicates better response time than solenoid actuators, and improved service life and reliability.

B72-10010

GYRO SPRING AUGMENTATION SYSTEM

H. D. Danielson (Lockheed-Calif. Co.) and A. W. Brandstetter (Lockheed-Calif. Co.)

1972

ARC-10496

Spring-loaded piston with provision for hydraulic control of spring action varies the stiffness of hydraulic control systems.

B72-10011

FERROMAGNETIC-FLUID LOGIC DEVICES

M. J. Makowski (TRW Systems Group) and C. Mangion (TRW Systems Group)

1972

ARC-10503

Logic element switches flows of low pressure process control fluid in fluidics assemblies. Device operates both electrically and fluidically and is controlled by passing permanent magnet or electromagnet over elements, thus providing proximity switching functions.

B72-10012**CAVITATING VENTURI SUMP**

C. Mangion (TRW Systems Group)

1972 See also NASA-CR-86435

ARC-10504

By ducting spent fluid into a cavitating Venturi sump formed in a main stream of propellant, hazardous working fluid of fluidic systems on board spacecraft or rockets is vented harmlessly.

B72-10013**HERMETIC ISOLATION VALVES**

M. J. Makowski (TRW Systems Group) and C. Mangion (TRW Systems Group)

1972

ARC-10505

Mechanism consists of thermal actuator, which expands when flow is desired, forcing cutter poppet through a diaphragm seal. Design concept is useful in systems that are stored for long periods of time before operation.

B72-10022**WIND TUNNEL BUFFET LOAD MEASURING TECHNIQUE**

C. S. Chang (Lockheed Missiles and Space Co.) and A. M. Ellison (Lockheed Missiles and Space Co.)

1972

ARC-10495

Indirect force measurement technique estimates unsteady forces acting on elastic model during wind tunnel tests. Measurement of forces is practically insensitive to errors in aeroelastic scaling between model and full-scale structure, simplifying design, fabrication and dynamic calibration.

B72-10024**ZERO-LEAKAGE VALVES**

R. J. Salvinski (TRW Systems Group)

1972

ARC-10506

Valve action confines polymeric material in a metal groove effecting seal by compressive reaction of the polymer. As cold flow does not occur, sealing material resiliency is preserved over numerous operations.

B72-10037**SOLENOID-OPERATED SWING-CHECK VALVE**

P. D. Quattrone and R. H. Meacham

1972

XAC-10048

Modification of spring-loaded swing-check valve for solenoid operation provides low-vacuum swing-check valve which can be operated remotely.

B72-10040**REDUCTION OF FAN NOISE: A CONCEPT**

M. R. Simonson (GE)

1972

ARC-10312

Acoustic materials strategically located within or near noise sources are effective for noise abatement on wing mounted lift fans, nozzles, engines and other noise sources. Panels are straightforward and easily adaptable to situations outside of aircraft technology.

B72-10049**PRESSURE SENSITIVE GAS FLOW METER**

C. E. Hallum (Philco-Ford Corp.)

1972 See also NASA-CR-73231

ARC-10219

Regulator, which increases flow area in discrete steps as upstream pressure falls, maintains steady flow rate of gas as the supply pressure from storage system decreases.

B72-10075**GRAPH FOR LOCKED ROTOR CURRENT**

R. R. Peck (N. Am. Rockwell Corp.)

1972

MSC-15703

Graph determines effect of stalled motor on a distribution system and eliminates hand calculation of amperage in emergen-

cies. Graph is useful to any manufacturer, contractor, or maintenance department involved in electrical technology.

B72-10078**CONTINUOUS-FLOW VARIABLE-DENSITY WIND TUNNEL FACILITIES**

J. G. Herrera

1972

NPO-11287

Unique features of wind tunnel facilities at Jet Propulsion Laboratory permit variety of conventional and novel tests to be performed at supersonic and hypersonic speeds. Facilities and operations are described.

B72-10084**OPTIMIZED BRAKING OF LANDING VEHICLES WITH ATMOSPHERIC DRAG**

A. K. Bejczy

1972

NPO-11402

Decelerating effect of atmospheric drag assures minimum fuel consumption and time expenditure during braking for soft landing.

B72-10093**COMPENSATING SUBREFLECTOR FOR TWO-REFLECTOR ANTENNAS: A CONCEPT**

D. A. Bathker, M. S. Katow, and P. D. Potter

1972

NPO-11503

Segmented subreflector surface of Cassegrainian antenna is distorted and shaped by mechanical means to compensate for loss of figure in main reflector. Number of segments necessary is determined by gravity distortion pattern of main reflector at zenith and at horizon.

B72-10097**SQUIB-ACTUATED DISCONNECT DEVICE**

D. P. Davis

1972

NPO-11544

Piston-operated device retains gases released by explosive squibs during stage separation of a spacecraft.

B72-10104**REMOVAL OF FILLER MATERIAL FROM LARGE HIGH ENERGY FORMED PARTS**

D. E. Krantz (N. Am. Rockwell Corp.), G. W. Wine (N. Am. Rockwell Corp.), and J. S. Corral (N. Am. Rockwell Corp.)

1972

M-FS-16326

Filler material is removed by applying steam heat at 88.99 C to underside of workpiece and allowing filler to melt and drain from the waffle grids.

B72-10105**MICRORESONATOR FOR DAMPING FLOW OSCILLATIONS**

E. Bramblett (Rocketdyne)

May 1972

M-FS-18401

Resonant spring-mass system detunes flow oscillations of pump's inlet line to prevent structural damage in fluidic system.

B72-10121**MICRO REGULATING BALL VALVE**

J. W. Hawkins

1972

ARC-10295

Ball valve of simple, rugged configuration overcomes leakage because there are no critical wear areas. Design has stable and precise calibration. Device can be assembled or disassembled in seconds and needs no lubrication.

Graph determines effect of stalled motor on a distribution system and eliminates hand calculation of amperage in emergen-

cies. Graph is useful to any manufacturer, contractor, or maintenance department involved in electrical technology.

B72-10133

POSITIVE FAST SEALING UNION CONNECTIONS

C. M. Kleber

Dec. 1972

LEWIS-11290

Union connections are designed for connecting high pressure flexible hoses from gas storage manifolds to gas transport trailers. Connection uses O ring seals which can be quickly assembled and disassembled without use of wrenches, and which do not twist hose. Worn or damaged O rings are easily replaced.

B72-10135

BOILER FOR GENERATING HIGH QUALITY VAPOR

V. H. Gray, P. J. Marto, and A. W. Joslyn

May 1972 See also NASA-TN-D-4136; NASA-TN-D-6307

LEWIS-11345

Boiler supplies vapor for use in turbines by imparting a high angular velocity to the liquid annulus in heated rotating drum. Drum boiler provides a sharp interface between boiling liquid and vapor, thereby inhibiting the formation of unwanted liquid droplets.

B72-10158

FLUIDIC IGNITION DETECTION

C. S. Henry (Aerojet Liquid Rocket Co.)

Jul. 1952

M-FS-21498

Ignition sensor, utilizing fluidic oscillator device and its ability to react to flow system's molecular weight and temperature changes, detects propellant ignition. Commercial applications include fields of fire protection equipment and fluidics.

B72-10162

FLUIDIC PRESSURE REGULATORS

C. Mangion (TRW Systems Group) and W. Miller (TRW Systems Group)

1972

ARC-10474

Three basic areas for possible application of fluidic control to rocket engine subsystems were identified and six subsystem configurations were analyzed for study. Results provide indication of tradeoffs involved between conventional and fluidic regulators and should be of interest to control and applications engineers who need to make similar analyses.

B72-10163

CLOSED-CYCLE POWER SUPPLY FOR FLUIDIC CONTROL SYSTEMS

O. Fiet (TRW System Group) and C. Mangion (TRW Systems Group)

1972

ARC-10480

Power supply utilizes small quantities of two-phase fluid of suitable thermodynamic properties for circulation in a capillary-pumped heat transfer loop. Fluid is vaporized in evaporator, passed through fluidic system load, condensed, pumped by multistage capillary pump, and returned to the evaporator.

B72-10183

ANGULAR VELOCITY AND ACCELERATION METER

L. Melamed

May 1972

LEWIS-11466

Meter uses a liquid crystalline film which changes coloration due to shear-stresses produced by a rotating disk. Device is advantageous in that it is not subject to bearing failure or electrical burnouts as are conventional devices.

B72-10204

A PIEZOELECTRICALLY ACTUATED BALL VALVE

L. R. Erwin (Bendix Corp.), H. W. Schwartz (Bendix Corp.), and B. R. Teitelbaum (Bendix Corp.)

May 1972

ARC-10338

Bimorph strip composed of two layers of poled piezoelectric ceramic material closes and opens valve. Strip performs like capacitor, allowing initial inrush of current when valve is energized and then only small leakage current flows as valve remains energized.

B72-10210

TWO-STAGE COAXIAL GAS COMPRESSOR

W. S. Wang (TRW Systems Group), H. W. Wright, Jr. (TRW Systems Group), and S. Huniu (TRW Systems Group)

May 1972

ARC-10426

Compressor raises pressure of gases from low ambient supply during space experiments by a system of low weight, size, and power input. Dc rotary-torque motor and ball-screw drive shaft activate first and second stage of compressor, utilizing inertia forces to operate check valves.

B72-10213

INTEGRATED FLIGHT CONTROLLER FOR LIGHT AIRCRAFT

J. W. Olcott (Aeron. Res. Associates of Princeton, Inc.), D. R. Ellis (Aeron. Res. Associates of Princeton, Inc.), and E. Seckel (Aeron. Res. Associates of Princeton, Inc.)

May 1972

ARC-10456

Controller-throttle engages spoiler/dive brake system when throttle setting is below a fixed power setting and gradually increases effect of spoiler/dive brake as throttle is moved toward idle position; since action is automatically reversible, a sudden application of power abruptly terminates aerodynamic effects of spoiler/dive brake system.

B72-10228

SIMPLE, REPRODUCIBLE METHODS FOR THERMAL SHOCK TESTING OF BRITTLE MATERIALS

J. C. Rowley and C. R. King

May 1972

NUC-11020

Technique requires radio frequency induction power source, induction furnace and good vacuum system to induce brittle material thermal shock testing.

B72-10239

ENERGY ABSORBER USES EXPANDED COILED TUBE

E. F. Johnson

Dec. 1972

AEC-10044

Mechanical shock mitigating device, based on working material to its failure point, absorbs mechanical energy by bending or twisting tubing. It functions under axial or tangential loading, has no rebound, is area independent, and is easy and inexpensive to build.

B72-10241

FERROFLUIDIC SOLENOID WITH AXIAL AND RADIAL DISPLACEMENT

E. E. Sabelman

Aug. 1972

NPO-11738

New design is proposed for ferrofluidic solenoid with low magnetic flux leakage. Solenoid consists of a coil centered within a football-shaped elastomeric capsule filled with a ferromagnetic fluid. Fluid replaces the solid, movable core of conventional solenoids, and elastomeric capsule acts as return spring.

B72-10250

FLUIDIC SYSTEMS MAY IMPROVE COMBUSTION IN AUTOMOTIVE ENGINES

C. Mangion (TRW Systems Group)

Sep. 1972

ARC-10582

Application of fluidic devices to reduce generation of noxious exhausts from internal combustion engines is discussed. Operation of fluidic system to provide bypass of fuel air mixture into heated loop to provide more complete combustion is explained.

Advantage lies in no moving parts required for fluidic by-pass action.

B72-10258
REPEATABLE METHOD OF THERMAL STRESS FRACTURE TEST OF BRITTLE MATERIALS

J. C. Rowley, R. W. Andrae, and A. E. Carden
 Jun. 1972
 NUC-11019

Method heats specimens slowly and with sufficient control so that the critical temperature gradient in the specimens cannot occur before temperature equilibrium is reached.

B72-10289
FLOW EQUATION FOR POROUS PLUG AND CAPILLARY TUBE FLOW RESTRICTORS

W. S. Davis (Avco Corp.)
 Jun. 1972
 GSFC-11387

Development of flow measuring apparatus for determining low flow performance of resistojet thruster is discussed. Diagram of test equipment is presented. Operation of test equipment is described and numerical relationships are explained.

B72-10323
ISOGRID STRUCTURE

R. R. Meyer (McDonnell-Douglas Corp.)
 Jul. 1972
 M-FS-21567

Isotropic rib stiffened shell whose ribs intersect to form equilateral triangles has advantages of high twisting rigidity of construction and simplicity of triangular pattern.

B72-10330
LIQUID METHANE GELLED WITH METHANOL AND WATER REDUCES RATE OF NITROGEN ABSORPTION

E. M. Vanderwall (Aerojet Liquid Rocket Co.)
 Jul. 1972 See also NASA-CR-72876
 LEWIS-11574

Dilution of gelant vapor with inert carrier gas accomplishes gelation. Mixture is injected through heated tube and orifice into liquid methane for immediate condensation within bulk of liquid. Direct dispersion of particles in liquid avoids condensation on walls of vessel and eliminates additional mixing.

B72-10331
SMALL TURBINE-TYPE FLOWMETERS FOR LIQUID HYDROGEN

I. Warshawsky, H. F. Hobart, and H. L. Minkin
 Jul. 1972 See also NASA-TM-X-52984
 LEWIS-11535

Characteristics of turbine-type flowmeters in two sizes and with various types of bearings are presented. Calibration procedures of instruments are described. Accuracies obtainable under various conditions are analyzed.

B72-10338
PORTABLE ELECTRON BEAM WELD CHAMBER

J. R. Lewis (N. Am. Rockwell Corp.) and J. M. Dimino (N. Am. Rockwell Corp.)
 Sep. 1972
 MSC-17738

Development and characteristics of portable vacuum chamber for skate type electron beam welding are discussed. Construction and operational details of equipment are presented. Illustrations of equipment are provided.

B72-10380
EXPANDABLE COATING COCOON LEAK DETECTION SYSTEM

R. L. Hauser (Hauser Labs.) and M. C. Kochansky (Hauser Labs.)
 Jul. 1972
 M-FS-21848

Development of system and materials for detecting leaks in cocoon protective coatings is discussed. Method of applying materials for leak determination is presented. Pressurization of

system following application of materials will cause formation of bubble if leak exists.

B72-10381
LEAK DECAY METHOD OF HELIUM BOMBARDMENT LEAK TESTING

W. P. Garton (N. Am. Rockwell Corp.)
 Jul. 1972
 M-FS-24109

Method for verifying hermetic seal quality of small components is described. Procedure for using helium bombardment and examination with mass spectrometer is described. Technique eliminates errors in seal quality determination and checks quality of seals without contaminating products.

B72-10399
IMPROVEMENTS OF ZEYDED METHOD FOR CALCULATING FLUTTER OF FLAT PANELS

J. E. Yates (Aeron. Res. Associates of Princeton, Inc.)
 Jul. 1972
 M-FS-20955

Method for calculating flutter boundaries and estimating stresses in infinite spanwise array of panels is presented. Numerical analyses are included for pinned edge panels, isotropic panel material, zero viscous damping, and no elastic foundation. Design flutter boundaries are presented for aluminum panels on Saturn spacecraft trajectory.

B72-10403
NONSTEADY FLOW-DIRECTION MEASUREMENT

L. N. Krause and R. L. Summers
 Jul. 1972 See also NASA-TM-X-52962
 LEWIS-11499

Nonsteady flow probe uses miniature pressure transducers mounted within probe support very close to tube inlets. Response speed depends on internal volume between tube inlet and pressure transducer location.

B72-10407
PREDICTION OF FLOW-INDUCED FAILURES OF BRAIDED FLEXIBLE HOSES AND BELLOWES

L. E. Sack (N. Am. Rockwell Corp.), R. L. Nelson (N. Am. Rockwell Corp.), D. R. Mason (N. Am. Rockwell Corp.), and R. A. Cooper (N. Am. Rockwell Corp.)
 Jul. 1972
 M-FS-19004

Analytical techniques were developed to evaluate braided hoses and bellows for possibility of flow induced resonance. These techniques determine likelihood of high cycle fatigue failure when such resonance exists.

B72-10408
TURBOPUMP THERMODYNAMIC COOLING

T. C. Patten (McDonnell-Douglas Corp.) and H. B. McKee (McDonnell-Douglas Corp.)
 Jul. 1972
 M-FS-21597

System for cooling turbopumps used in cryogenic fluid storage facilities is described. Technique uses thermodynamic propellant vent to intercept pump heat at desired conditions. Cooling system uses hydrogen from outside source or residual hydrogen from cryogenic storage tank.

B72-10436
RIGHT ANGLE MOUNTED COLD TRAP

R. J. Ugiansky
 Jul. 1972
 GSFC-11323

Vacuum system for calibrating, aligning, and evaluating solar research instruments is described. Equipment consists of right-angle mounted cold trap connected to side pumping vacuum system. Operation of test facility and conditions obtainable in test chamber are discussed.

B72-10437
INVESTIGATIONS OF A TURBULENT JET IN A CROSSFLOW

Y. Kamotani (Case Western Reserve Univ.) and I. Greber (Case Western Reserve Univ.)

Jul. 1972 See also NASA-CR-72893

LEWIS-11680

Analyses of flow field downstream of jet directed at right angles into crossflow for heated and unheated single jets are presented. Application of flow data to cooling system for gas turbine combustion chambers is discussed. Temperature distribution, velocity trajectory, and vortex motion are described.

B72-10441

MULTIPLE REACTION MASS AND ISOLATION SYSTEM

N. F. Jacobson (N. Am. Rockwell Corp.)

Jul. 1972

M-FS-24119

System allows measurement of damping and stiffness with the desired uncoupling of measurement fixture and permits testing of large structures without need for costly foundation or base. System is designed to permit horizontal loading to be conveniently superimposed on vibratory loads.

B72-10446

COMBINATION PRESSURE REGULATOR AND SAFETY VALVE: A CONCEPT

R. L. Acres (Serv. Technol. Corp.)

Jul. 1972

MSC-14088

Device for regulating high pressure liquefied gas to high pressure vapor generator using liquid oxygen is described. System includes pressure regulation and safety valve features. Construction of the equipment and method of operation are presented.

B72-10466

CONSTANT TENSION DEVICE FOR GRAVITY SIMULATION

W. F. Orlowski (Sperry Rand Corp.)

Aug. 1972

M-FS-21618

Mechanical device for simulating lunar gravitation is described. Details of construction are illustrated and example of application is provided. Device works opposite to effects of earth gravity and produces effects similar to lunar conditions by providing mechanical lifting forces.

B72-10476

IMPACT SENSITIVITY OF MATERIALS IN CONTACT WITH LIQUID AND GASEOUS OXYGEN AT HIGH PRESSURE

R. J. Schwinghamer

Dec. 1972

M-FS-21930

Tests run at high pressure indicate that various polymer materials used show inverse relationship between thickness and impact sensitivity. Several materials tested exhibited greater impact sensitivity in gaseous oxygen than in liquid oxygen. Materials tested in gaseous oxygen showed enhanced impact sensitivity with higher pressure.

B72-10488

ANALYTICAL FAILURE DETERMINATION OF FLOW-INDUCED FATIGUE IN BELLOWS

R. G. Cron (Rocketdyne)

Aug. 1972

M-FS-18178

Fatigue failure of bellows when subjected to passage of fluids at high speeds is discussed. It is assumed that flow through bellows generates sound in fluid and vibration caused by sound waves is principal contributor to failure. Effects of sound waves on bellows structure are analyzed.

B72-10489

IMPROVED HIGH-TEMPERATURE GIMBAL JOINT

J. R. Winemiller, S. T. Yee, and B. H. Neal

Aug. 1972

LEWIS-11705

Development and characteristics of bellows gimbal joint for reduction of thermal stress effects are discussed. Reactions of designed joint to changes in temperature are described. Illustrations of conventional gimbal joint and improved gimbal joint are provided.

tions of conventional gimbal joint and improved gimbal joint are provided.

B72-10490

AUTOMATIC AIR FLOW CONTROL IN AIR CONDITIONING DUCTS

H. D. Obler

Aug. 1972

GSFC-11445

Device is designed which automatically selects air flow coming from either of two directions and which can be adjusted to desired air volume on either side. Device uses one movable and two fixed scoops which control air flow and air volume.

B72-10494

A SYSTEM FOR EARLY WARNING OF BEARING FAILURE

J. J. Broderick (Mech. Technol., Inc.), R. F. Burchill (Mech. Technol., Inc.), and H. L. Clark (Mech. Technol., Inc.)

Aug. 1972

M-FS-21877

System for detecting incipient failure in ball bearings is described. Ultrasonic equipment detects bearing system resonance and provides warning signal through electronic circuitry. Detector can be used to evaluate performance of newly installed bearings. Schematic diagram is provided to show components.

B72-10496

DRY ICE PLUG FOR HYDRAULIC AND PNEUMATIC PIPE FLUSHING

L. Francino (Grumman Aerospace Corp.) and S. Rauch (Grumman Aerospace Corp.)

Aug. 1972

MSC-12548

Development of technique to clear blockages in hydraulic and pneumatic pipes is discussed. Technique consists of using dry ice plug to separate sensitive components from flushing fluid. Diagram of equipment and principles of operation are presented.

B72-10502

INTEGRATED MONOPROPELLANT THRUSTER

C. Mangion (TRW Systems Group)

Aug. 1972

NPO-12004

Application of vortex amplifier principles to throttling of monopropellant thrusters is described. Integration of flow control, catalyst bed, and thruster nozzle is accomplished by design of thruster. Diagrams of thrusters are provided to show details of construction and operation.

B72-10540

IMPROVED SAMPLING OF COMPRESSED GASES FOR CONDENSABLE HYDROCARBON CONTENT

M. H. Peterson (Bendix Corp.) and E. W. Fickey (Bendix Corp.)

Sep. 1972

KSC-10304

Sampling process was developed which uses commercially available high pressure filters and provides measurements in fraction of time required by older methods. Measurements show no significant difference in results between low pressure and high pressure samples. Filter method is slightly more accurate than scrubber technique.

B72-10543

A STAGNATION PRESSURE PROBE FOR USE IN SUPERSONIC FLOW

M. J. Goodyer

Sep. 1972

LANGLEY-11139

Probe was developed which is capable of recording true stagnation pressure in supersonic and subsonic flows. Static pressure orifices in the compression surface allow probe to be used as combined flow direction and stagnation pressure sensor.

B72-10546

PROBE MEASURES GAS AND LIQUID MASS FLUX IN HIGH MASS FLOW RATIO TWO-PHASE FLOWS

R. J. Burick (N. Am. Rockwell Corp.)

Sep. 1972 See also NASA-CR-120819

LEWIS-11270

Deceleration probe constructed of two concentric tubes with separator inlet operates successfully in flow fields where ratio of droplet flow rate to gas flow rate ranges from 1.0 to 20, and eliminates problems of local flow field disturbances and flooding. Probe is effective tool for characterization of liquid droplet/gas spray fields.

B72-10552**MICRO-SCALE CREASE-AND-FOLD APPARATUS**

R. F. Muraca (Stanford Res. Inst.) and J. Neff (Stanford Res. Inst.)

Oct. 1972

NPO-12029

Crease and fold resistance of polymeric films and test equipment for determining mechanical properties is discussed. Components of equipment and method of operation are described. Illustration of test device is provided.

B72-10558**RESTRAINT AND LOCOMOTION AID**

H. C. Vykukal

Sep. 1972

ARC-10153

Design of system to permit human performance in conditions where gravity and friction forces cannot act as counterforces is described. Application of system to performance of work in space is discussed. Diagram is provided to show construction and operation of equipment.

B72-10576**LEAK TEST SYSTEM**

R. G. Morris (McDonnell-Douglas Corp.) and A. L. Rose (McDonnell-Douglas Corp.)

Sep. 1972

M-FS-21788

System for quantitative determination of leak rates in large pressurized compartments is described. Method uses pressure reference cylinder placed in thermal contact with internal environment of compartment. Construction of equipment and details of operational procedure are reported. Illustration of equipment is included.

B72-10581**IMPROVED SILVER-ZINC BATTERY-TERMINAL SEALS**

W. E. Snider, D. W. Medwid, and W. J. Nagle

Sep. 1972 See also NASA-TM-X-68067

LEWIS-11615

Development of battery terminal seal for sealing electrolyte for periods of three to five years is discussed. Operating conditions of battery are defined. Components of electrolyte seal and method of production are reported. Schematic diagrams of device are included.

B72-10590**HIGH PRESSURE LIQUID GAS PUMP**

R. L. Acres (Serv. Technol. Corp.)

Sep. 1972

MSC-14087

Design and development of two types of pumps for handling liquefied gases are discussed. One pump uses mechanical valve shift and other uses pneumatic valve shift. Illustrations of pumps are provided and detailed description of operation is included.

B72-10598**THERMAL INDUCED FLOW OSCILLATIONS IN HEAT EXCHANGERS FOR SUPERCRITICAL FLUIDS**

J. C. Friedly (GE), J. L. Manganaro (GE), and P. G. Krueger (GE)

Sep. 1972

M-FS-21262

Analytical model has been developed to predict possible unstable behavior in supercritical heat exchangers. From complete model, greatly simplified stability criterion is derived. As result of this criterion, stability of heat exchanger system can be predicted in advance.

B72-10603**RESPONSE OF A PANEL STRUCTURE TO REVERBERANT ACOUSTIC EXCITATION**

D. Cadin, Jr. (Lockheed Missiles and Space Co.)

Dec. 1972

M-FS-21774

Investigation was made of methods for predicting response of panel structures to acoustic excitation. Computer program was generated to calculate response of panel to reverberant acoustic field, using normal mode approach developed for low frequency response. Program can be modified to handle other types of acoustic fields by changing spatial correlation calculation.

B72-10613**A FOUR-PANEL ENCLOSURE PROTECTS FROM EXPLOSION**

P. V. King (GE)

Oct. 1972

M-FS-21847

Development of multi-layered baffle as enclosure to protect personnel from effects of explosion during production of ammunition is discussed. Advantages of new system over previous systems are described. Illustration of typical panel structure is provided.

B72-10615**SOLAR POWERED ABSORPTION CYCLE HEAT PUMP USING PHASE CHANGE MATERIALS FOR ENERGY STORAGE**

R. L. Middleton

Oct. 1972

M-FS-21927

Solar powered heating and cooling system with possible application to residential homes is described. Operating principles of system are defined and illustration of typical energy storage and exchange system is provided.

B72-10626**INTERNAL CAPILLARY INSULATION FOR CRYOGENIC TANKS**

J. L. McGrew (Martin Marietta Corp.)

Nov. 1972

LEWIS-11234

Capillary-type insulation was devised for installation on inside of liquid methane fuel tanks for future aircraft. Insulation consists of honeycomb core of fiberglass cloth impregnated with polyimide resin which is bonded onto metal tank wall using polyimide adhesive. Capillary holes in each honeycomb cell admit methane which provides static pressure in cell.

B72-10631**USE OF SMALL TURBINE-TYPE FLOWMETERS TO MEASURE FLOW IN LARGE PIPES**

H. L. Minkin and H. F. Hobart

Nov. 1972

LEWIS-11851

Measurement of mass flow in large pipes using small turbine-type flowmeters is discussed. Experiments for determining accuracy of flowmeter and applicability to various types of flow measurement are reported. Illustration of turbine flowmeter and calibration curve are included.

B72-10636**LINEAR ACCELERATOR: A CONCEPT**

J. Mutzberg (Boeing Co.)

Oct. 1972

KSC-10618

Design is proposed for inexpensive accelerometer which would work by applying pressure to fluid during acceleration. Pressure is used to move shuttle, and shuttle movement is sensed and calibrated to give acceleration readings.

B72-10651**FREON 21 BEARING LUBRICATION AND COOLANT SYSTEM**

E. J. Bodensieck (N. Am. Rockwell Corp.) and M. J. Gustafson

(N. Am. Rockwell Corp.)
Dec. 1972
HQ-10302

Lubrication and cooling of turbopump rotor bearings by liquid Freon 21 is reported. Freon expands in rotor bearing and acts as heat sink by removing heat during warming and evaporation. Gaseous Freon is removed by vacuum pump controlling rotor chamber operation.

B72-10663
AUTOMATIC WATER INVENTORY, COLLECTING, AND DISPENSING UNIT
J. B. Hall, Jr. and E. F. Williams
Dec. 1972
LANGLEY-11071

Two cylindrical tanks with piston bladders and associated components for automatic filling and emptying use liquid inventory readout devices in control of water flow. Unit provides for adaptive water collection, storage, and dispensation in weightless environment.

B72-10669
SPRAG SOLENOID BRAKE
P. H. Dane
Oct. 1972
M-FS-21846

Operation of solenoid braking mechanism is discussed. Illustrations of construction of the brake are provided. Device is used for braking low or medium speed shaft rotations and produces approximately ten times braking torque of similar solenoid brakes.

B72-10677
PROPELLANT FEED SYSTEMS TRANSIENTS
R. A. Shumway (N. Am. Rockwell Corp.) and G. R. Cox (N. Am. Rockwell Corp.)
Dec. 1972
MSC-17848

Program was written to assist in analysis of fluid feed line transients initiated by operation of valves. Program output consists of printout of transient pressures and velocities through feed system as function of time. Optional CRT plot output provides for display of transient pressures and velocities as function of time at any desired location in feed system.

B72-10679
A MONOSTRAIN TEST APPARATUS
J. C. Helf (N. Am. Rockwell Corp.), W. L. Hill (N. Am. Rockwell Corp.), and H. L. Pontius (N. Am. Rockwell Corp.)
Dec. 1972
M-FS-24221

Test apparatus is designed for determining tensile strength, modulus of elasticity, elongation, and thermal coefficient of contraction or expansion of uniformly shaped plastics, adhesives, and foam materials over temperature range of 700 to 90 K (800 to -300). Tests may be used in design quality control, and in evaluation of new adhesives and plastic materials.

B72-10686
AN OPTICAL QUALITY METER SUITABLE FOR CRYOGENIC LIQUIDS
H. F. Hobart and H. L. Minkin
Oct. 1972 See also B66-10394
LEWIS-11814

Construction of instrument to measure ratio of liquid to gas of flowing transparent cryogenic fluid is described. Instrument consists of collimated light source and photoconductive cell. Operation of instrument is described and illustration of equipment is provided.

B72-10689
NEW DETECTION METHOD FOR ROLLING ELEMENT AND BEARING DEFECTS
R. F. Burchill (Mech. Technol., Inc.) and J. L. Freary (Mech. Technol., Inc.)
Oct. 1972
M-FS-21911

Instrument for detecting defects in rolling elements of bearings is described. Detection depends on rate at which rolling elements impact defect and establish envelope amplitude of ball resonant frequency. Block diagram of instrument is provided and results obtained in conducting tests are reported.

B72-10692
SEAT BELT RESTRAINT SYSTEM
A. Garavaglia and D. Matsuhira
Oct. 1972
ARC-10519

Shoulder-harness and lap-belt restraint system was designed to be worn by individuals of widely different sizes and to permit normal body motion except under sudden deceleration. System is divided into two basic assemblies, lap belt and torso or shoulder harness. Inertia-activated reels immediately lock when seat experiences sudden deceleration.

B72-10693
EJECTOR NOZZLE WITH MASSIVE BLOWING
H. C. True (Boeing Co.)
Oct. 1972
ARC-10621

Jet-flap, wing-blowing system for use in short takeoff and landing aircraft is described. System depends on ejector nozzle with large blowing capacity to direct ducted air against deflected flap. Operation of equipment during takeoff and cruise conditions is discussed. Diagrams of equipment are provided.

B72-10704
CONCENTRIC-SEATING POPPET
W. F. MacGlashan, Jr.
Oct. 1972
NPO-11658

Configuration of poppet valve with zero clearance sudden initial contact is described. Detailed description of valve operation is presented and diagram of components is illustrated.

B72-10712
ENERGY ABSORBING SYSTEM FOR MECHANICAL IMPACTS
E. R. Collins, Jr.
Dec. 1972
NPO-10671

System is described based on use of arrangement of crushable hollow spheres bonded together in layers of progressively different diameter, with largest diameter spheres positioned to receive impact forces initially. System is particularly useful for delivery of payloads by air-drop techniques.

B72-10713
SQUIB-OPERATED DISCONNECT
P. Alexander, Jr. and A. R. McDougal
Dec. 1972
NPO-11330

Disconnect device is described, which consists of stud with enlarged end held in collet locked by pins, which are held in place by piston. When squib is fired, trapped combustion products force piston to release pins.

B72-10714
TRIANGULAR WHEEL LOCOMOTION MECHANISM
E. Hryniewicz (Comprehensive Designers, Inc.)
Dec. 1972
NPO-11366

Triangular wheel and suspension vehicle is described which can scale obstacle higher than its own length.

B72-10715
DESIGN CRITERIA MONOGRAPH ON SOLID ROCKET MOTOR IGNITERS
Innovator not given (Lewis Res. Center) Dec. 1972 See also NASA-SP-8051
LEWIS-11826

06 MECHANICS

Summary of large and loosely organized body of existing successful design techniques and practices for solid rocket motor igniters is presented.

B72-10716

A MULTIELEMENT PROBE FOR COINCIDENT TEMPERATURE AND PRESSURE MEASUREMENTS

G. E. Glawe, T. J. Dudzinski, and L. N. Krause
Dec. 1972 See also NASA-TM-X-2577

LEWIS-11775

Small, multielement probes are described which measure total pressure and temperature coincidentally at one or several points in gas stream.

B72-10722

OPTIMIZATION OF FLUID LINE SIZES WITH PUMPING POWER PENALTY IBM-360 COMPUTER PROGRAM

D. Jelinek (N. Am. Rockwell Corp.)
Dec. 1972

MSC-17930

Computer program has been developed to calculate and total weights for tubing, fluid in tubing, and weight of fuel cell power source necessary to power pump based on flow rate and pressure drop. Program can be used for fluid systems used in any type of aircraft, spacecraft, trucks, ships, refineries, and chemical processing plants.

B72-10723

THERMAL-POWERED RECIPROCATING PUMP

E. E. Sabelman
Dec. 1972

NPO-11417

Waste heat from radioisotope thermal generators in spacecraft is transported to keep instruments warm by two-cylinder reciprocating pump powered by energy from warm heat exchange fluid. Each cylinder has thermally nonconductive piston, heat exchange coil, and heat sink surface.

B72-10733

A PROPOSED REMOTE MANIPULATOR SYSTEM: A CONCEPT

S. Brodie (Martin Marietta Corp.), C. Flatau (Martin Marietta Corp.), and F. Greeb (Martin Marietta Corp.)
Dec. 1972

MSC-14245

System is described with variable ratio, mixed mode, bilateral, master-slave control. Manipulator arms consist of shoulder and elbow with two degrees of freedom, a wrist with three degrees of freedom, and terminal grasping device. Feedback is provided by TV cameras attached near shoulder, grasping device, and at end of shuttle opposite arm.

B72-10738

EXPERIMENTAL STUDY OF FLOW DISTRIBUTION WITH CIRCUMFERENTIAL MANIFOLDS

R. T. Dittrich
Dec. 1972 See also NASA-TN-D-6697

LEWIS-11649

Water flow test results on fluid flow distribution and pressure loss in curved manifolds with tangential or radial entry are reported. Manifolds were studied both as inlet and outlet manifolds. Manifolds can be used for boilers and/or heat exchangers for advanced space electric power plants.

B72-10743

REDUCTION OF NOISE IN GYRO OUTPUTS

G. M. Kraus (Honeywell, Inc.) and J. G. Rupert (Honeywell, Inc.)
Dec. 1972

NPO-11603

Technique is described to reduce extraneous gyro output signals by using relatively inexpensive shrouds which do not increase power consumption. Shrouds reduce noise by minimizing

mass of gas spinning with rotor, reducing Reynolds number near rotor, and inducing laminar flow.

B72-10748

FINAL REPORT ON A STUDY OF LOW-DENSITY NOZZLE FLOWS, WITH APPLICATION TO MICROTHRUST ROCKETS

Innovator not given (Cornell Aeron. Lab., Inc.) Dec. 1972

HQ-10761

Method for predicting nozzle performance of microthrust rockets is discussed. Method is numerical and uses simplified computer program on IBM 360/65 computer. Analysis is based on slender channel equations with slip boundary conditions at walls. Implicit finite difference scheme is used to calculate pressure and velocity profiles along channel.

B72-10749

EFFECTS OF NONUNIFORM SWASH-PLATE STIFFNESS ON COUPLED BLADE-CONTROL SYSTEM DYNAMICS AND STABILITY

V. J. Piarulli (Rochester Appl. Sci. Associates, Inc.)
Dec. 1972

LANGLEY-11068

Program has been developed that analytically determines effects of nonuniform swash-plate support stiffness, swash-plate flexibility, and out-of-blade track on vibratory mechanical stability characteristics of helicopter rotor systems. Analysis is based on combined Laplace transform and associated matrix approach.

B73-10023

SATELLITE AUXILIARY PROPULSION SYSTEMS

L. B. Holcomb
Jan. 1973 See also JPL-TR-32-1505

NPO-11744

Report is announced which describes techniques for selecting optimum system for specific satellite mission. Descriptions of propulsion systems are presented along with illustrations and diagrams. Report contains references, cost-effectiveness techniques, and reliability measurements and estimates.

B73-10026

MAGNETIC LATCHING VALVE

J. M. Conley
Jan. 1973

NPO-11790

Latching, fast-acting 2-port poppet valve has been developed for use in gas chromatograph - mass spectrometer combinations. Requisites included positive actuation time, few hundredths of a second, and static force holding valve in position at all times.

B73-10028

FLUID INSULATION TO PREVENT ICE FORMATION IN HEAT EXCHANGERS

G. A. Coffinberry (GE)
Mar. 1973

LEWIS-11959

Heat transfer surfaces were insulated to maintain air side surface temperature above freezing. Double wall tubes, with annular space between tubes, were filled with static liquid hydrogen. Low thermal conductivity of this hydrogen provided thermal resistance.

B73-10029

BIMETALLIC DEVICES FOR STIRRING FLUIDS

T. N. Canning
Feb. 1973

ARC-10441

Device consists of helical heating coil inside cylinder and affixed at one end. Piston is fastened at other end and is free to move axially through cylinder. Electrical power extends coil when applied to conductors. Bimetallic stirrer may also be made in vane form.

B73-10034

MECHANICAL POSITIONING DEVICE FOR LANGMUIR PROBE

C. W. Perkins
Feb. 1973
NPO-11626

Lightweight, portable device has been developed to permit probe movement in two planes. It also provides accurate information about location of probe tip in a closed chamber.

B73-10041
MAGNETIC PARTICLE CLUTCH CONTROLS SERVO SYSTEM

P. B. Fow (Rockwell Intern. Corp.)
Mar. 1973
JSC-17136

Magnetic clutches provide alternative means of driving low-power rate or positioning servo systems. They may be used over wide variety of input speed ranges and weigh comparatively little. Power drain is good with overall motor/clutch efficiency greater than 50%, and gain of clutch is close to linear, following hysteresis curve of core and rotor material.

B73-10042
TRAVELING DIGITAL COUNTERS FOR MICROMETERS

C. T. Haley and J. M. Moore
Feb. 1973
LANGLEY-11258

Five digit micrometer readings are made directly and quickly with no loss of precision. It is virtually impossible for micrometer to be misread. Digitized micrometer can also be used for repetitive measurements.

B73-10057
DYNAMIC TESTING OF COMPLEX STRUCTURES

C. Birs (Grumman Aerospace Corp.) and P. Anderson (Grumman Aerospace Corp.)
Mar. 1973
JSC-12569

Response of structure is determined under impulses large enough to create severe strains. Electrodynamical shaker can provide impulses to nearly any point on structure and can deliver repeated pulses of varying force and duration.

B73-10059
MECHANICAL IMPEDANCE AND ACOUSTIC MOBILITY MEASUREMENT TECHNIQUES OF SPECIFYING VIBRATION ENVIRONMENTS

G. C. Kao (Wyle Labs.)
Feb. 1973
M-FS-22016

Method has been developed for predicting interaction between components and corresponding support structures subjected to acoustic excitations. Force environments determined in spectral form are called force spectra. Force-spectra equation is determined based on one-dimensional structural impedance model.

B73-10061
MEASUREMENT OF DIMENSIONS AND ALIGNMENT WITH OPTICAL INSTRUMENTS

W. F. Dendy
Feb. 1973
M-FS-22168

Course, as contained in manual, encompasses principles involved in determining and applying proper optical tooling devices to fulfill precise measuring requirements.

B73-10076
THERMAL-DYNAMIC MODELING STUDY

I. U. Ojalvo (Grumman Aerospace Corp.)
Mar. 1973 See also NASA-CR-2125
LANGLEY-11309

Study provides basic information for designing models and conducting thermal-dynamic structural tests. Factors considered are development and interpretation of thermal-dynamic structural scaling laws; identification of major problem areas; and presentation of model fabrication, instrumentation, and test procedures.

B73-10111
A VERSATILE FLAMMABILITY TEST CHAMBER

C. L. Springfield, W. J. Paton, and J. D. Jeter
May 1973
KSC-10126

Relatively inexpensive test chamber safely tests flammability of most materials while allowing constant observation of test. Chamber can be used at various pressures, under controlled atmosphere, and is equipped with probes to vary distance from heat source to test object or to move it for observation from several different angles.

B73-10117
PARTICLE-FLUID INTERACTIONS FOR FLOW MEASUREMENTS

N. S. Berman (Arizona State Univ.)
Mar. 1973
M-FS-21727

Study has been made of the motion of single particle and of group of particles, emphasizing solid particles in gaseous fluid. Velocities of fluid and particle are compared for several conditions of physical interest. Mean velocity and velocity fluctuations are calculated for single particle, and some consideration is given to multiparticle systems.

B73-10128
DETECTOR FOR INSPECTION OF FIRE ALARMS

G. T. Clawson
Mar. 1973
GSFC-11600

Portable detector tests rate-of-rise temperature devices. Incandescent light bulb is calibrated to produce rate of temperature rise necessary to activate properly functioning alarm.

B73-10150
A SIMPLE, ACCURATE DEPTH CHECK GAUGE

E. P. Rauch (Rockwell Intern. Corp.)
May 1973
JSC-17166

Easily made, pen-light battery operated production check gauge has probe-activated switch with fail-safe features to insure proper operation. Parts can be reliably and quickly checked. Gauge is equipped with tolerance band adjustment and can use interchangeable probes for different applications. Accompanying tester permits frequent check of calibration.

B73-10183
THEORETICAL PREDICTION OF INTERFERENCE LOADING ON AIRCRAFT STORES: PART II -- SUPERSONIC SPEEDS

C. H. Fox, Jr. and F. Fernandes (Gen. Dynamics Corp.)
Jun. 1973 See also B73-10184
LANGLEY-11250

Linear theory is used, without two dimensional or slender body assumptions, to predict flow field produced by aircraft wing, nose, inlet, and pylons. Aircraft shock wave locations are predicted, and their effect on flow field is included through transformation of aircraft geometry. Program was written in FORTRAN IV for CDC 6400 computer.

B73-10184
THEORETICAL PREDICTION OF INTERFERENCE LOADING ON AIRCRAFT STORES: PART I - SUBSONIC SPEEDS

C. H. Fox, Jr. and F. Fernandes (Gen. Dynamics Corp.)
Jun. 1973 See also B73-10183
LANGLEY-11249

Computer program is developed for theoretically predicting loading on pylon-mounted stores in subsonic compressible flow. Linear theory predicts flow field produced by aircraft wing, nose, inlet, and pylons. Program was written in FORTRAN IV for CDC 6000 computer.

B73-10200
AIR-ATOMIZING SPLASH-CONE FUEL NOZZLE REDUCES POLLUTANT EMISSIONS FROM TURBOJET ENGINES

R. D. Ingebo and C. T. Norgren
Nov. 1973 See also NASA-TN-D-7154
LEWIS-11918

Advantages of fuel nozzle over conventional pressure-atomizing fuel nozzles: simplicity of construction, ability to distribute fuel-air mixture uniformly across full height of combustor without using auxiliary air supply, reliability when using contaminated fuels, and durability of nozzle at high operating temperatures.

B73-10201
A SELF-SUPPORTING STRAIN TRANSDUCER

I. S. Hoffman
Jun. 1973

LANGLEY-11263

Self-contained mechanical measuring system is handmounted by simply compressing installation spring and inserting device into hole of matching size. It is self-aligning as each contact pin maintains constant contact with surface being measured. Strain level is controlled by design to provide for measurements over almost unlimited number of load cycles.

B73-10205
BRAZE ALLOYS FOR HIGH TEMPERATURE SERVICE

R. A. Lindberg, R. L. McKisson (Rockwell Intern. Corp.), and G. Erwin, Jr. (Rockwell Intern. Corp.)

Jun. 1973 See also NASA-CR-1591; NASA-CR-1592; NASA-CR-54093; NASA-CR-72850; NASA-CR-120831

LEWIS-11374

Two groups of refractory metal compositions have been developed that are very useful as high temperature brazing alloys for sealing between ceramic and metal parts. Each group consists of various compositions of three selected refractory metals which, when combined, have characteristics required of good braze alloys.

B73-10207
MASS FLOW CONTROLLER FOR GASEOUS PROPELLANTS

Innovator not given (Parker Hannifin Corp.) Jun. 1973 See also NASA-CR-128639

JSC-14221

Gaseous propellants exhibit large variations in pressure and temperature and hence in fuel delivery. All-mechanical, mass flow controller which compensates for these variations has been developed to maintain constant fuel rate of gas. Further work is necessary to ease inlet pressure limitation.

B73-10230
FLUIDIC DEVICE FOR MEASURING CONSTITUENT MASSES OF A FLOWING BINARY GAS MIXTURE

P. R. Prokopius

Nov. 1973 See also NASA-TM-X-1269; NASA-TM-X-2741

LEWIS-11995

Device consists of fluidic humidity sensor and specially designed flow calorimeter. Calorimeter provides readings of gas stream temperature rise produced by measured amount of heat that is dissipated into gas stream, and humidity sensor is used to obtain continuous calculation of specific heat capacity of gas mixture.

B73-10234
HIGH-FRICTION MECHANICAL GRIPS

E. G. Stevens (Rockwell Intern. Corp.)

Aug. 1973

JSC-19260

Plasma-arc spraying offers method of preparing required surface at greatly reduced cost. Coarse-grained, tungsten carbide bonded-nickel coating is applied by spraying. Coating has been used successfully on wedge-shaped mechanical test grips.

B73-10239
METHOD FOR PREDICTING ROTOR FREE-WAKE POSITIONS AND THE RESULTING ROTOR BLADE AIRLOADS

D. Deen, W. R. Mantay, and S. G. Sadler (Rochester Appl. Res. Assoc., Inc.)

Aug. 1973

LANGLEY-10674

Computer program has been designed and written to predict rotor free-wake positions and resulting rotor blade airloads without requiring time-consuming and tedious calculations. This program was written in FORTRAN IV for use on an IBM-360 computer.

B73-10240
BONDED PANEL, FLAW DETECTION STANDARDS

R. J. Platt, Jr., L. B. Thurston, Jr., and R. M. Baucom

Aug. 1973

LANGLEY-11399

With optical holography or ultrasonic equipment, process prepares standards for use in detection of flaws in bonded panels. Metal-to-metal, composite-to-metal, and composite-to-composite flaw standards have been produced by this process, and all have been used and tested successfully.

B73-10276
OPTIMIZATION OF STRUCTURES ON THE BASIS OF FRACTURE MECHANICS AND RELIABILITY CRITERIA

E. Heer and J. -N. Yang

Jun. 1973 See also NASA-CR-116827

NPO-11645

Systematic summary of factors which are involved in optimization of given structural configuration is part of report resulting from study of analysis of objective function. Predicted reliability of performance of finished structure is sharply dependent upon results of coupon tests. Optimization analysis developed by study also involves expected cost of proof testing.

B73-10325
ACOUSTIC-EMISSION SIGNAL-PROCESSING ANALOG UNIT FOR LOCATING FLAWS IN LARGE TANKS

F. J. Moskal (Rockwell Intern. Corp.) and J. D. Fageol (Rockwell Intern. Corp.)

Sep. 1973

M-FS-24424

Technique monitors structural flaws in 105-in. diameter tanks. Tank surface is divided into many areas and each area is sectioned into 20 equilateral triangles that form icosahedron. Twelve transducers are equally positioned on tank surface at vertex of each triangle. Transducers monitor area for flaws by detecting any increase in acoustical activity.

B73-10326
ARTICULATED ELASTIC-LOOP ROVING VEHICLES

C. J. Chang (Lockheed Corp.) and W. Trautwein

Oct. 1973

M-FS-22691

Prototype vehicle features exceptional obstacle-negotiating and slope-climbing capabilities plus high propulsive efficiency. Concept should interest designers of polar or ocean-bottom research vehicles. Also, its large footprint and low ground pressure will minimize ecological damage on terrain with low bearing strength, as in off-the-road application.

B73-10332
A MULTIDEGREE-OF-FREEDOM VIBRATIONAL APPARATUS

J. J. Kerley, Jr. and N. C. Schaller

Sep. 1973

GSFC-11302

Apparatus uses prestressed cables to support vibrational table. Cables are durable, do not require frequent servicing, and provide increased safety. Because much weight rests on these cables, vibration actuating pistons can provide longer service. In event of structural failure of other supporting components, they will support entire weight of vibrational table.

B73-10347
THERMALLY ACTUATED VALVE

R. H. Silver

Aug. 1973

NPO-11846

Effective seal in one-shot valve is made by shrink-fitting ball within cylinder; thermal expansion of cylinder, caused by contiguous source of heat, will release ball and open valve. Valve can also be adapted for repeated operation and made capable of being opened without pressurized fluid.

B73-10348
HEATED BIMETAL STRIP PREVENTS DAMAGE OF BEARINGS BY VIBRATION

L. J. Derr
Aug. 1973
NPO-11870

Strip of bimetal is shaped as split ring; when properly fabricated from thin sheet, width of strip increases when it is heated. When width of strip increases, outer races are forced apart, thus pressing balls tightly against inner races. Strip applies axial load to bearing, amount of load being function of temperature to which strip is heated.

B73-10364
STRUCTURAL HEAT PIPE
S. Ollendorf
Oct. 1973

GSFC-11619

When solar heat is absorbed through the structural support member it is fed directly to a heat pipe. Energy is transferred by heat pipe around to a cooler spot before it can find its way to the structure. This prevents local hot spots from occurring on the sun side and excessive heat leaks on the dark side.

B73-10380
LOW-CLOSING-FORCE SEAL
L. E. Bergquist (Martin Marietta Corp.)
Sep. 1973

ARC-10775

Compress soft, inert metal gasket between cone and corresponding socket to attach tubes to vessels containing gas samples. Technique effects seals with minimum of applied force and does not contaminate contents. Seal is formed when port connector is pushed firmly into its socket. Gold washer is deformed and forced to flow into imperfections in surfaces.

B73-10395
ISOGRID DESIGN HANDBOOK
R. R. Meyer (McDonnell Douglas Corp.), O. P. Harwood (McDonnell Douglas Corp.), M. B. Harmon (McDonnell Douglas Corp.), and J. I. Orlando (McDonnell Douglas Corp.)
Oct. 1973
M-FS-22686

Handbook has been published which presents information needed for design of isogrid triangular integral-stiffened structures. It develops equations, methods, and graphs to handle wide variety of loadings, materials, and geometry. Handbook is divided into seven sections. Handbook may be used by marine and civil engineers and by students and designers without access to computers.

B73-10398
INDUSTRIAL FILTER BAGS CLEANED BY HIGH-FREQUENCY VIBRATION: A CONCEPT
A. V. Kooy (Rockwell Intern. Corp.)
Nov. 1973
M-FS-24445

System holds filter bag around fine-mesh metal screen and vibrates screen at its resonant frequency. This removes deposited byproducts and protects bag fibers from damaging forces. Because filter bags represent 20 to 40% of any industrial filtering investment, this method of extending bag life should be of interest to those responsible for plant maintenance.

B73-10405
BACKFLUSHING SYSTEM RAPIDLY CLEANS FLUID FILTERS
V. A. DesCamp (Martin Marietta Corp.), M. W. Boex (Martin Marietta Corp.), M. W. Hussey (Martin Marietta Corp.), and T. P. Larson (Martin Marietta Corp.)
Nov. 1973 See also NASA-CR-115505
JSC-14273

Self contained unit can backflush filter elements in fraction of the time expended by presently used equipment. This innovation may be of interest to manufacturers of hydraulic and pneumatic systems as well as to chemical, food, processing, and filter manufacturing industries.

B73-10414
SMOKE GENERATOR

K. L. Parrish
Dec. 1973
LANGLEY-11433

Generator is simple in construction, efficient, and extremely easy to start and regulate. It can be of such small size and weight that it can be installed easily inside a model. Size can be changed to suit needs, as long as operating temperatures can be attained and identified controls are utilized.

B73-10419
ACCELEROMETER-CONTROLLED AUTOMATIC BRAKING SYSTEM
R. C. Dreher, R. K. Sleeper, and J. R. Nayadley, Sr.
Dec. 1973 See also NASA-TN-D-6953

LANGLEY-11383

Braking system, which employs angular accelerometer to control wheel braking and results in low level of tire slip, has been developed and tested. Tests indicate that system is feasible for operations on surfaces of different slipperinesses. System restricts tire slip and is capable of adapting to rapidly-changing surface conditions.

B73-10429
CONDENSATE-REMOVAL DEVICE FOR HEAT EXCHANGERS

R. B. Trusch (United Aircraft Corp.) and E. W. O'Connor (United Aircraft Corp.)

Dec. 1973

JSC-14143

Device comprises array of perforated tubes manifolded together and connected to a vacuum suction device. Vacuum applied to these tubes pulls mixture of condensate and effluent gas through perforations and along length of tubes to discharge device. Discharge device may be a separator which separates water vapor from effluent air and allows recirculation of both of them.

B73-10430
SEQUENTIAL-STRIP AND SEQUENTIAL-DISK FILTERS
J. P. Winzen (Brunswick Corp.)
Dec. 1973
JSC-14592

Filter senses increasing pressure drop and uses this to compress bellows. Compression of bellows stores energy in spring until predetermined pressure-drop level is reached. At this point, bellows and spring are released. Relaxation of spring is used to move a clean area of screen into position across fluid stream.

B73-10455
INSTRUMENT FOR MEASURING THIN-FILM BELT LENGTHS

T. A. Casad, H. Piggott, and J. K. Hoffman
Mar. 1974

NPO-13149

Instrument consists of base, vernier height gauge, sliding block, and balance-beam assembly with tension weight. Pulley bracket is provided with three pulley mounting holes, 4 inches apart, to accommodate widely different belt lengths. Instrument is accurate to within 0.001 inch and is suitable for commercial production.

B73-10456
LINEAR KINEMATIC AIR BEARING
S. D. Mayall
Mar. 1974
NPO-13151

Bearing provides continuous, smooth movement of the cat's-eye mirror, eliminating wear and deterioration of bearing surface and resulting oscillation effects in servo system. Design features self-aligning configuration; single-point, pivotal pad mounting, having air passage through it; and design of pads that allows for precise control of discharge path of air from pads.

06 MECHANICS

B73-10464

NONDESTRUCTIVE LEAK TESTING

T. K. Lusby, Jr. and F. Lawrence
Mar. 1974

LANGLEY-11561

Method provides opportunity to effect repairs without compromising integrity of enclosed circuitry or mechanism by loss of atmosphere or by ingestion of foreign matter or gas. It is possible to detect leaks in modules which are sealed while fully evacuated, partially evacuated, or containing some form of gas.

B73-10465

STRAIN ARRESTOR PLATE FOR MOUNTING RIGID INSULATING TILES

M. H. Kural (Lockheed Missiles & Space Co.)
Mar. 1974

JSC-14182

Plate is made of material having coefficient to thermal expansion similar to that of insulating material. Although plate may be formed from appropriate alloy, it has been found that a combination of graphite fibers in epoxy resin is satisfactory and much lighter in weight.

B73-10466

SOLID-STATE CONTROLLER

C. L. Bailey
Mar. 1974

JSC-12394

Attitude controllers are used to guide roll, pitch, and yaw of vehicle in flight. Controllers enclose multitude of switches, gears, cams, and other hardware needed to transmit pilot's commands to attitude control systems. New design, using magnetic coupled transducers, eliminates many mechanical parts, improving reliability and reducing maintenance.

B73-10470

IMPROVED METHOD FOR AERODYNAMIC ANALYSIS OF WING-BODY-TAIL CONFIGURATIONS IN SUBSONIC AND SUPERSONIC FLOW

C. H. Jr. Fox and F. A. Woodward (Analytical Methods, Inc.)
Mar. 1974

LANGLEY-11305

Method permits analysis of noncircular bodies and calculation of wing-body interference effects in presence of body closure, two features not previously available. In addition, use of vortex distribution, having linear variation in streamwise direction, results in improved chordwise pressure distributions on wing and tail surfaces.

B73-10478

IMPROVED SYNCOM-TYPE FLUID DAMPER

J. Evans
Mar. 1974
GSFC-11205

Two efficient types of fluid nutation dampers that are simple, reliable, and inexpensive have been developed. In use, either damper may be mounted on a spinning body, parallel to the spin axis of the body and radially displaced from it, to eliminate nutation.

B73-10484

SOLAR-ENERGY ABSORBER: ACTIVE INFRARED (IR) TRAP

L. W. Brantley, Jr.
Mar. 1974
M-FS-22743

Efficiency of solar-energy absorbers may be improved to 95% by actively cooling their intermediate glass plates. This approach may be of interest to manufacturers of solar absorbers and to engineers and scientists developing new sources of energy.

B73-10485

SOLAR-ENERGY ABSORBER: ACTIVE INFRARED (IR) TRAP WITHOUT GLASS

L. W. Brantley, Jr.
Mar. 1974
M-FS-22744

Absorber efficiency can be improved to 90% by removing glass plates and using infrared traps. Absorber configuration may be of interest to manufacturers of solar absorbers and to engineers and scientists developing new sources of energy.

B73-10496

MASTER/SLAVE MANIPULATOR SYSTEM

H. C. Vykukal, R. F. King, and W. C. Vallotton
Dec. 1973 See also B72-10297

ARC-10756

System capabilities are equivalent to mobility, dexterity, and strength of human arm. Arrangement of torque motor, harmonic drive, and potentiometer combination allows all power and control leads to pass through center of slave with position-transducer arrangement of master, and 'stovepipe joint' is incorporated for manipulator applications.

B73-10497

MECHANICAL PLANETARY COMPENSATING DRIVE SYSTEM

R. J. Zeiger and J. C. Gerdtz, Jr.
Dec. 1973

ARC-10462

Drive enables two concentric output shafts to be controlled independently or rotated as a unit. Possible uses are pointing and tracking devices, rotary camera shutters with variable light control, gimbal systems with yaw and pitch movement, spectrometer mirror scanning devices, etc.

B73-10502

FLEX FLAP

N. S. Currey (Lockheed-Georgia Co.) and J. T. Perry (Lockheed-Georgia Co.)
Dec. 1973

ARC-10771

To provide flap with large upper surface radius as required for airplanes with over-the-wing blowing, distort upper surface of flap by actuator. Flap can be used as control surface at leading as well as trailing edges and, with minor modification, as variant of Jacobs-Hurkamp air flap.

B73-10518

NONCONTACTING DEVICES TO INDICATE DEFLECTION AND VIBRATION OF TURBOPUMP INTERNAL ROTATING PARTS

D. B. Hamilton (Battelle Mem. Inst.), D. Ensminger (Battelle Mem. Inst.), D. R. Grieser (Battelle Mem. Inst.), A. M. Plummer (Battelle Mem. Inst.), E. J. Saccocio (Battelle Mem. Inst.), and J. W. Kissel (Battelle Mem. Inst.)
Mar. 1974

M-FS-22678

Published report discusses feasibility of ultrasonic techniques; neutron techniques; X-radiography; optical devices; gamma ray devices; and conventional displacement sensors. Use of signal transmitters in place of slip rings indicated possible improvement and will be subject of further study.

B73-10524

SOLAR-ENERGY CONVERSION SYSTEM PROVIDES ELECTRICAL POWER AND THERMAL CONTROL FOR LIFE-SUPPORT SYSTEMS

B. K. Davis
Mar. 1974

M-FS-21628

System utilizes Freon cycle and includes boiler turbogenerator with heat exchanger, regenerator and thermal-control heat exchangers, low-pressure and boiler-feed pumps, and condenser. Exchanger may be of interest to engineers and scientists investigating new energy sources.

B74-10001

MECHANICAL COUPLING FOR HIGH CYCLIC LOADING

M. O. Dustin and O. Mehmed
Mar. 1974 See also NASA-TM-X-2812

LEWIS-11690

One-piece cylindrical coupling with "necked-down" regions at each end form flexures allowing small misalignments between

actuator and load. Coupling has zero backlash, low mass, close spacing between actuator and load, high stiffness in direction of motion, and allowance for misalignments and deflections without causing high side loading on components.

**B74-10013
LIGHTWEIGHT, HIGH SPEED BEARING BALLS: A
CONCEPT**

R. J. Parker
Apr. 1974 See also B70-10331
LEWIS-11087

Low mass bearing balls with hardened iron-plated surfaces can eliminate problems of low fatigue strength and flexure fatigue, and lead to increased life and reliability of high speed ball bearings. Low mass balls exert lower centrifugal forces on outer race of bearing thus eliminating detrimental effect of high speed operation.

**B74-10028
WIRELESS TELEMETRY SYSTEM FOR FLOATING BODIES**
L. T. Fain and H. E. Cribb
Jul. 1974

KSC-10855
Unit includes rugged waterproof cables and equipment containers, low power, sturdy antenna construction, and easy equipment setup and serviceability. Accuracy and reliability of entire measurement system were not sacrificed.

**B74-10030
IMPROVED GENEVA MECHANISM**
C. H. Debenham (TRW, Inc.)
May 1974

LANGLEY-11443
Locking disk (flange) is stepped and lug is added to each arm of star wheel. These changes allow much longer cutout in star wheel stations, essentially eliminating chatter and wear. Jamming problem can be solved by extending star wheel arms and flaring slots.

**B74-10045
BRAKE FOR ROLLABLE PLATFORM**
A. L. Morris
May 1974

ARC-10512
Frame-mounted brake is independent of wheels and consists of simple lever-actuated foot. Brake makes good contact with surface even though foot pad is at higher or lower level than wheels, this is particularly important when a rollable platform is used on irregular surface.

**B74-10046
REVERSED COWL-FLAP THRUST AUGMENTOR**
D. Y. Cheng
May 1974

ARC-10754
Inlet mouthpiece with variable geometry improves low-speed performance of inlet (or ejector) of jet engines by use of reversed cowl-flap mechanism. Flaps can be adjusted mechanically or system can be operated with pressure taps set so pressure on inlet face is always smaller than pressure on back of inlet.

**B74-10048
SOLAR ARRAY DEPLOYMENT FROM A SPINNING
SPACECRAFT**

A. H. Carlin (TRW Systems Group, TRW, Inc.), J. B. Gardner (TRW Systems Group, TRW, Inc.), and H. A. Lassen (TRW Systems Group, TRW, Inc.)
May 1974
ARC-10787

Cylindrical drum, wrapped with flexible solar array of solar cells mounted on Mylar sheet, is held by two end-fittings with cable (under tension) passing through axle of drum. Drum is held to end-fittings by axial cable through drum axle; drum is released for deployment when cable is cut at each end and end-fittings spring outward.

**B74-10049
THRUST VECTOR CONTROL FOR V/STOL AIRCRAFT**
E. W. Toney (McDonnell-Douglas Corp.)
May 1974

ARC-10788
To deflect exhaust of V/STOL aircraft fan deploy set of rectangular flaps so exhaust stream can be turned as required, and then directed through exit nozzles which generate thrust in appropriate direction; lateral deflection of exhaust is provided by yaw vanes.

**B74-10058
VENTED VECTORING-NOZZLE FOR STOL AND V/STOL
AIRCRAFT**

D. W. Esker (McDonnell-Douglas Corp.)
May 1974
ARC-10839

Vented vectoring-nozzle has superior thrust coefficient and is lighter in weight because it does not require completely enclosed elbow duct ordinarily used to deflect nozzle flow. Improved nozzle has primary nozzle and three-sided elbow deflector.

**B74-10059
PROPELLANT ACQUISITION DEVICE FOR USE WITH A
SPINNING TOROIDAL TANK**

J. E. Anderson (Martin Marietta Corp.)
May 1974
ARC-10840

System consists of four radially disposed communication channels attached to propellant-retaining ring situated at bottom of toroidal tank. Ring-and-channel acquisition system design provides uniform propellant distribution within spinning tank during all mission phases.

**B74-10061
DESIGN CRITERIA MONOGRAPH FOR ACTUATORS AND
OPERATORS**

Innovator not given Jul. 1974 See also NASA-SP-8090
LEWIS-12264

Instrumentation for actuators and operators includes electrical position-indicating switches, potentiometers, and transducers and pressure-indicating switches and transducers. Monograph is based on critical evaluation of experiences and practices in design, test, and use of these control devices and instruments in operational space vehicles.

**B74-10070
SUPPRESSION OF BENDING MOTION IN ELASTIC BODIES**

J. C. Howard
Jun. 1974
XAC-05632

Sensor may be located on aircraft at such point that there can be extracted output signal which is function of aircraft acceleration. Signals are supplied to summing device where they are combined to produce output signal which controls application of suppression forces.

**B74-10076
DYNAMIC TRANSFORMATION METHOD**

J. R. Admire, E. J. Kuhar, Jr. (GE), and C. V. Stahle, Jr. (GE)
Jul. 1974
M-FS-22848

Eigenvalue problem associated with modal-synthesis vibration analysis of complex structures requires simplifying assumptions for solution. Computer program, Dynamic-transformation Adapted to Modal-synthesis Using Stiffness-coupling, improves computational economy for vibration analysis of complex structures while still considering substructure modes.

**B74-10087
DESIGN CRITERIA MONOGRAPH FOR VALVE COMPO-
NENTS**

Innovator not given Sep. 1974 See also NASA-SP-8094
LEWIS-12327
Monograph treats valve design technology problems as they were solved in successful development of lightweight operational

06 MECHANICS

valves for liquid rocket systems. General practices for cleaning and contamination prevention are summarized. Balance of information is arranged by topic, since detail design requirements apply to most types of valves.

B74-10091

PREDICTION OF UNSTEADY AERODYNAMIC LOADINGS CAUSED BY TRAILING-EDGE CONTROL-SURFACE MOTIONS IN SUBSONIC COMPRESSIBLE FLOW

M. C. Redman (Boeing Co.), W. S. Rowe (Boeing Co.), and B. A. Winther (Boeing Co.)
Aug. 1974

LANGLEY-11175

Program determines direct surface loadings, using pressure terms that correctly represent known singularity functions around boundaries or wing with control surface. Program provides numerical prediction of unsteady loadings caused by control-surface motions.

B74-10092

HEAT-TRANSFER THERMAL SWITCH

M. V. Friedell (Martin Marietta Corp.) and A. J. Anderson (Martin Marietta Corp.)
Aug. 1974

LANGLEY-11232

Thermal switch maintains temperature of planetary lander, within definite range, by transferring heat. Switch produces relatively large stroke and force, uses minimum electrical power, is lightweight, is vapor pressure actuated, and withstands sterilization temperatures without damage.

B74-10131

MAGNETIC BEARINGS WITH COMBINED RADIAL AND AXIAL CONTROL

L. Veillette
Sep. 1974

GSFC-11551

Bearings reduce friction by allowing air of vacuum gaps between rotating members through properly-applied magnetic fields. Advantages: There is no physical contact between rotor and support structure; bearings operate directly in vacuum environment without lubrication; and there is unlimited operating lifetime, independent of speed.

B74-10135

THERMALLY-STABLE, SYNTACTIC PYRRONE FOAMS

B. G. Kimmel (Hughes Aircraft Co.)
Sep. 1974 See also NASA-CR-2222

LANGLEY-11325

Foam formulations may be readily emplaced in honeycomb structures after heating to soft, doughlike consistency and forcing heated mixture into honeycomb cells. Final cure can be accomplished by simple oven cure, with no need for containment or restriction of foam formulation during cure.

B74-10138

CONTROL VANE FOR ENGINE EXHAUST FLOW

C. S. Shaw (USAAMRD-Langley Directorate) and J. C. Wilson (USAAMRD-Langley Directorate)
Sep. 1974 See also NASA-TM-X-3016

LANGLEY-11570

Vane solves problem of hot-gas exhaust impingement on curved-duct exteriors, shielding, and other nearby structure components. To eliminate secondary egress of exhaust, curved vane is placed upstream of engine exhaust duct and in close proximity to exhaust exit to induce free-stream flow more in line with exit.

B74-10144

SELF-LEVELING LOAD TABLE

J. L. Burch
Sep. 1974

M-FS-22039

Table floats in tank of water and has air compartments underneath. Table height and level are controlled by automatic adjustment or air pressure within these compartments.

B74-10146

ANTISKID BRAKING SYSTEM

J. S. Pazdera (Univ. of Mo.)
Sep. 1974

M-FS-22807

Published report describes analytical development and simulation of braking system. System prevents wheels from skidding when brakes are applied, significantly reducing stopping distance. Report also presents computer simulation study on system as applied to aircraft.

B74-10151

SEPARATION DYNAMICS OF S-II DERIVATIVE LAUNCH VEHICLE

L. A. Schmidt (Rockwell Intern. Corp.) and W. D. Vinson, Jr. (Rockwell Intern. Corp.)
Sep. 1974

M-FS-24325

Computer program analyzes separation dynamics between two vehicles from time prior to separation to later time when separation may be considered complete. Program also may be used in evaluating various separation schemes and synthesizing separation systems by manipulation of data and various program options.

B74-10156

HOLOGRAPHIC EVALUATION OF FATIGUE CRACKS BY A COMPRESSIVE STRESS (HYSTERESIS) TECHNIQUE

S. A. Freska (Martin Marietta Corp.) and W. D. Rummel (Martin Marietta Corp.)
Sep. 1974 See also NASA-CR-2369

MSC-14555

Holographic interferometry compares unknown field of optical waves with known one. Differences are displayed as interference bands or fringes. Technique was evaluated on fatigue-cracked 2219-T87 aluminum-alloy panels. Small cracks were detected when specimen was incrementally unloaded.

B74-10174

SWASHPLATE FEEDBACK CONTROL FOR TILT-ROTOR AIRCRAFT

H. R. Alexander (Boeing Vertol Co.), J. P. Magee (Boeing Vertol Co.), and J. J. Morris (Boeing Vertol Co.)
Sep. 1974 See also NASA-CR-114600; NASA-CR-114664

ARC-10854

Changes in angle of attack in system were sensed indirectly by gages which responded to strains induced in wing structure. Output signals were amplified, filtered, and used to activate swashplate actuators. System provided significant reduction in blade loads and desirable changes in hub forces and moments.

B74-10179

PULSE-WIDTH-MODULATED SERVO VALVE FOR AUTO-PILOT SYSTEM

H. D. Garner
Oct. 1974

LANGLEY-11643

Valve was developed for autopilot wing-lever system and is to be used in light, single-engine aircraft. Valve is controlled by electronic circuit which feeds pulse-width-modulated correction signals to two solenoids. Valve housing is cast from plastic, making it very economical to fabricate.

B74-10193

AUTOMATIC SOLDERING MACHINE

J. A. Stein (Rockwell Intern. Corp.)
Nov. 1974

MSC-19401

Fully-automatic tube-joint soldering machine can be used to make leakproof joints in aluminum tubes of 3/16 to 2 in. in diameter. Machine consists of temperature-control unit, heater transformer and heater head, vibrator, and associated circuitry controls, and indicators.

B74-10227

DESIGN CRITERIA MONOGRAPH FOR VALVE ASSEMBLIES

Innovator not given Dec. 1974 See also NASA-SP-8097
LEWIS-12332

Monograph is limited to valve selection factors for trade-off studies, configuration analyses, actuator selection, and integration of components. Material is organized along lines of valve design sequence.

B74-10228
DESIGN CRITERIA MONOGRAPH ON CENTRIFUGAL FLOW TURBOPUMPS

Innovator not given Dec. 1974 See also NASA-SP-8109
LEWIS-12346

Monograph reviews and assesses current design practices, and from them establishes firm guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort. Review should be of interest to manufacturers and users of pumps, power drives, turbine drives, and rotary equipment in general.

B74-10233
LAMINATING CORED, STRESSED-FACE, SANDWICH STRUCTURES

W. C. Heier
 Dec. 1974

XLA-11028

Structure assemblies of fragile and flexible components are rigidly supported from aggregate exterior during bonding operation. Support assures conformance to desired profiles and duplication of assembly results. It minimizes exterior surface identification with core character, improving structure rigidity while adding desirable aerodynamic qualities and finished appearance.

B74-10235
ENVIRONMENTAL CONTROL AND WASTE MANAGEMENT SYSTEM DESIGN CONCEPT

A. R. Gandy
 Dec. 1974

LANGLEY-11588

Passive device contains both solid and liquid animal waste matter for extended period without being cleaned and without contaminating animal. Constant airflow dries solid waste and evaporates liquid matter. Technique will maintain controlled atmospheric conditions and cage cleanliness during periods of 6 months to 1 year.

B74-10238
NONDESTRUCTIVE TESTING OF RAILROAD WHEELS AND RAILS BY ULTRASONICS

W. N. Clotfelter and E. R. Risch
 Dec. 1974

M-FS-23086

Quality control of wheels and rails can be improved by using ultrasonic technique developed for measuring stresses in metallic materials. In addition, parts already in use can be tested and replaced if they are found to be unsafe. Test equipment includes two transducers.

B74-10241
IMPLEMENTATION OF A SELF-CONTROLLING HEATER: A CONCEPT

M. G. Strange
 Dec. 1974 See also NASA-TN-D-7248

GSFC-11752

Proposed heater uses its own temperature coefficient for sensing function. Heating power is supplied from current source, heater voltage containing temperature information. Dynamic stability is very high since there is no thermal lag as would exist with separate heater and sensor.

B74-10252
EXPANDABLE SPACE FRAMES

A. H. Schoen
 Jan. 1975

ERC-10365

Frame consists of struts connected by hinge joint assemblies. Because struts are hinged, entire frame can be collapsed during transportation and expanded at construction site. Frame

has two types of hinge joint assemblies; one for three-dimensional space frame expansion and another for two-dimensional expansion.

B74-10267
LEAD-OXYGEN CLOSED-LOOP BATTERY SYSTEM

W. J. Britz, W. A. Boshers, and J. J. Kaufmann
 Jan. 1975

M-FS-23059

Calculations show that battery can deliver up to 35 watt-hours per pound, conventional lead-acid batteries deliver 10 to 15 watt-hours per pound. Weight reduction is due to replacement of solid lead-peroxide electrodes with metal current-collector screen, catalyst, and Teflon membrane.

B74-10273
FLANGE DESIGN FOR LARGE-SCALE MODULAR ASSEMBLY JIGS

M. M. Gilman (Rockwell Intern. Corp.)
 Jan. 1975

MSC-19372

Technique incorporates weld-free method for securing flanges to projecting ends of unmachined box-beam framework so flanged structure may be reused without modification. One such framework may be readily assembled to another by simply matching flanges together and passing connecting members between preformed holes in structures.

B75-10003
LOW-COST, PORTABLE FIRE HOSE TESTER

F. P. Jocke and E. R. Miller
 Mar. 1975

LEWIS-12365

Availability of pumping unit permits scheduling and performing required periodic hose tests in proper manner while retaining full fire equipment readiness. Use of pumping unit preserves operating life and capability of pumper truck.

B75-10009
DESIGN CRITERIA MONOGRAPH ON AXIAL FLOW TURBINES

Apr. 1975 See also NASA-SP-8110

LEWIS-12376

Monograph provides guidelines for predicting turbine performance, sizing gas-path elements, and avoiding problems associated with mechanical design and development. Material in monograph is organized along lines of design and development effort necessary to produce turbine that satisfies requirements imposed on it.

B75-10010
DESIGN CRITERIA MONOGRAPH ON TURBOPUMP GEARS

Apr. 1975 See also NASA-SP-8100

LEWIS-12377

Turbopump power gears were brought to acceptable levels of usefulness and reliability through refinements in interdependent areas of design, materials, processing, and quality control combined with extensive development testing that explored problem areas and evaluated potential solutions.

B75-10013
DESIGN CRITERIA MONOGRAPH FOR METAL TANKS AND TANK COMPONENTS

Apr. 1975 See also NASA-SP-8088

LEWIS-12434

Significant elements in detail tank design are wall and end structures, weld joints at bulkhead and attachment junctures, and ports and access openings. Additional design considerations are influence and effect of fabrication processes on tank component design, and finally, testing and inspection that are required to establish confidence in tank design.

B75-10022
LONG LIFE, HIGH SPEED, THRUST-LOAD BALL BEARINGS

H. Signer (Ind. Tectonics, Inc.), N. E. Bamberger (GE), and V. E. Zaretsky

May 1975 See also NASA-TM-X-68264; NASA-TN-D-7837

LEWIS-12269

06 MECHANICS

Long-term bearing operation at three million DN can be achieved with high degree of reliability using full combination of sophisticated but currently available state-of-the-art bearing materials and designs, lubricants, and lubricating techniques.

B75-10044

HIGH-STRENGTH RIVET DOES NOT REQUIRE AGING

F. J. Charles (Rockwell Intern. Corp.)

Apr. 1975

MSC-19301

Aluminum rivet is simpler to handle. It does not need aging and provides better high-temperature and shear properties than conventional rivets. Tests at upset height of up to 1.7 diameters have shown rivets to have exceptionally good crack resistance.

B75-10052

GAS BEARING OPERATES IN VACUUM

S. G. Perkins

Apr. 1975

NPO-13425

Bearing has restrictions to reduce air leaks and is connected to external pumpout facility which removes exhausted air. Token amount of air which is lost to vacuum is easily removed by conventional vacuum pump.

B75-10055

LOW-PROFILE LANDING-GEAR ASSEMBLY

M. P. Harper (Boeing Co.) and D. F. Neumann (Boeing Co.)

Apr. 1975

ARC-10786

Assembly of cylinders, links, actuators, and gears permits landing-gear unit to be retracted into shadow of main engine intake ducts of supersonic transport aircraft. This is accomplished without adding to frontal area of aircraft or appreciably increasing total aircraft drag.

B75-10058

MOTOR-DRIVEN RACK-POSITIONING DEVICE

E. M. Crissey (Martin Marietta Corp.)

Apr. 1975

ARC-10864

Ramped clutch plate prevents damage to gear train and provides ample linear motion for actuation of microswitch. Operation of device is not affected by number of revolutions which pinion shaft must make to produce required translations. Since ramps in spur gear are conical, device will actuate identically at each mechanical stop.

B75-10063

DESIGN CURVES FOR OPTIMIZING STABILITY OF HERRINGBONE-GROOVED JOURNAL BEARINGS

P. D. Fleming and J. B. Hamrock

May 1973 See also NASA-TN-D-7803

LEWIS-12442

Curves span wide range of operating conditions, including: lubricant compressibility numbers from 0 to 80, bearing length-to-diameter ratios from 1/4 to 2, and either rotating or stationary grooved members.

B75-10064

SCANNING-ELECTRON-MICROSCOPE USED IN REAL-TIME STUDY OF FRICTION AND WEAR

A. W. Brainard and D. H. Buckley

Jun. 1975 See also NASA-TN-D-7700

LEWIS-12448

Small friction and wear apparatus built directly into scanning-electron-microscope provides both dynamic observation and microscopic view of wear process. Friction and wear tests conducted using this system have indicated that considerable information can readily be gained.

B75-10065

DIFFUSION PUMP MODIFICATION PROMOTES SELF-CLEANSING AND HIGH EFFICIENCY

A. E. Buggele

Jul. 1975 See also NASA-TM-X-2932

LEWIS-12323

Modifications eliminate contaminant substances from pump fluid during operation, which are principal causes of torpidity on evaporative surface. Diffusion pump is also acting as still. Resulting 100 percent vigorous working surface provides much greater molecular throughput and greatly improved efficiency.

B75-10074

AIRFOIL DISPERSES SMOKESTACK EFFLUENTS UPWARD

R. C. Costen

May 1975

LANGLEY-11669

System consists of negative-lift airfoil mounted at or near top of smokestack without obstructing flow of effluents from stack. Controls adjust negative lift and drag of airfoil, for changing orientation of airfoil to maintain proper airflow over foil and for adjusting its vertical location with respect to top of smokestack.

B75-10085

TORQUE CONTROL SYSTEM

D. K. Studenick, A. L. Tyler, and W. Squillari

Jun. 1975

GSFC-11077

System stabilizes azimuth of gondolas which are carried by high-altitude balloons as platforms for tracking telescopes. When telescopes must be constantly aimed at specific targets, control system stabilizes gondola to within 5 arc-seconds.

B75-10095

SIMPLE AND EFFECTIVE METHOD TO LOCK BUOY POSITION TO OCEAN CURRENTS

W. A. Vachon (Charles Stark Draper Lab., Inc.) and J. M. Dahlen

(Charles Stark Draper Lab., Inc.)

Jun. 1975

M-FS-23140

Window-shade drogue, used with drifting buoys to keep them moving with current at speed as close to that of current as possible, has drag coefficient of 1.93 compared to maximum of 1.52 for previous drogues. It is remarkably simple to construct, use, and store.

B75-10110

CRYOGENIC LINE INSULATION MADE FROM PREFABRICATED POLYURETHANE SHELLS

G. Lerma (Rockwell Intern. Corp.)

Jun. 1975

MSC-19523

Prefabricated polyurethane foam insulation is inexpensive and easily installed on cryogenic lines. Insulation sections are semicircular half shells. Pair of half shells is placed to surround cryogenic line. Cylindrically-shaped knit sock is pulled over insulation then covered with polyurethane resin to seal system.

B75-10111

POWERED FIRE NOZZLE FOR FAST PENETRATION OF STRUCTURES: A CONCEPT

J. F. Parker (Rockwell Intern. Corp.) and R. L. Robbins (Rockwell Intern. Corp.)

Jun. 1975

MSC-19528

Nozzle has been proposed with tip that will punch through wall very quickly. It would allow extinguishing agent to be delivered inside closed structure in minimum amount of time. Two versions of nozzle have been conceived: one operated from hydraulic pressure source and one activated by explosive charge.

B75-10131

MINIMIZATION OF JET AND CORE NOISE BY ROTATION OF FLOW

I. R. Schwartz

Jun. 1975

ARC-10712

Jet and core noise can be reduced and flame lengths may be significantly decreased when exhaust gases are caused to rotate or swirl about longitudinal axis of exhaust. Combustion in

rotating flows is steady and quiet, and is not accompanied by pulsations or violent fluctuations.

**B75-10132
NEW DESIGN OF HINGELESS HELICOPTER ROTOR IMPROVES STABILITY**

R. A. Ormiston (USAAMRDL), W. G. Bousman (USAAMRDL), D. H. Hodges (USAAMRDL), and D. A. Peters (USAAMRDL)
Jun. 1975
ARC-10807

Cantilever blades are attached directly to rotor hub, thereby substantially reducing cost and complexity and increasing reliability of helicopter rotor. Combination of structural flap-lag coupling and pitch-lag coupling provides damping of 6 to 10%, depending on magnitude of coupling parameters.

**B75-10134
SILICON NITRIDE USED AS A ROLLING-ELEMENT BEARING MATERIAL**

R. J. Parker and E. V. Zaretsky
Jul. 1975 See also NASA-TN-D-7794
LEWIS-12447

Rolling-element fatigue tests were conducted with hot-pressed silicon nitride to determine its ability to withstand concentrated contacts in rolling-element bearings. If hot-pressed silicon nitride is used for both balls and races, attention must be paid to fitting both shaft and bearing housing.

**B75-10135
DESIGN CRITERIA MONOGRAPH ON TURBOPUMP SYSTEMS**

Jul. 1975 See also NASA-SP-8107
LEWIS-12499

Turbopump assembly for modern liquid propellant rocket engine is complete system in itself. It consists of many components, some of which are themselves subsystems. Monograph deals with turbopump as system, covering selection of proper system type for each application and integration of components into working system.

**B75-10151
GRAPHITE FIBER-POLYIMIDE COMPOSITE ROD END BEARINGS FOR HIGH-TEMPERATURE HIGH-LOAD APPLICATIONS**

H. E. Sliney and T. P. Jacobson
Oct. 1975 See also NASA-TN-D-7880
LEWIS-12514

Self-aligning plain spherical and plain cylindrical oscillating bearings with self-lubricating elements are composed of 50 weight-percent chopped graphite fibers and 50 weight-percent polyimide.

**B75-10165
SOLAR RESIDENTIAL HEATING AND COOLING SYSTEM**

D. E. Melton and W. R. Humphries
Aug. 1975
M-FS-23260

System has been placed in operation to verify technical feasibility of using solar energy to provide residential heating and cooling. Complete system analysis was performed, to provide design information.

**B75-10173
LIGHTWEIGHT DUCTS FABRICATED FROM REINFORCED PLASTICS AND ELASTOMERS**

F. S. Dawn, T. J. Ballentine, R. E. Bishop (Rockwell Intern. Corp.), and C. R. Rousseau (Rockwell Intern. Corp.)
Aug. 1975
MSC-19482

Method has been developed for fabrication of lightweight ducts that are three times stronger than aluminum ducts. Method can be used to produce either flexible or rigid ducts.

**B75-10190
IMPROVED AIR ATOMIZING SPLASH-GROOVE FUEL INJECTOR REDUCES POLLUTANT EMISSIONS FROM TURBOJET ENGINES**

R. D. Ingebo and C. T. Norgren
Oct. 1975 See also NASA-TM-X-3255
LEWIS-12417

Device produces finely atomized sprays which improve performance characteristics and reduce pollutant emissions of advanced high-pressure and high-temperature turbojet engines.

**B75-10199
MARSHALL VEHICLE-ENGINEERING SIMULATION SYSTEM (MARVES)**

W. E. Keenum (Computer Sci. Corp.)
Sep. 1975
M-FS-21701

Computer language was developed to furnish programmers with standardized system for handling digital computer simulation of trajectories. System contains collection of models which represent problem to be solved and description of one or more events peculiar to the problem.

**B75-10201
ULTRASONIC DETECTION OF FLAWS IN LARGE STRUCTURAL AREAS**

F. E. Sugs (Rockwell, Intern. Corp.) and C. C. Kammerer (Rockwell Intern. Corp.)
Sep. 1975
MSC-19499

System's transducer consists of three piezoelectric elements that produce relatively-wide ultrasonic beam which covers significantly larger area and can monitor from a fixed point.

**B75-10203
GAS GENERATORS PRODUCE HYDROGEN-RICH FUEL**

J. Houseman, R. Kushida, and J. H. Rupe
Sep. 1975 See also B75-10208
NPO-13342; NPO-13464

Resulting fuel, which is produced from gasoline and water, can be burned by gasoline engines with significantly reduced pollution and improved fuel economy.

**B75-10208
HYDROGEN-RICH GAS GENERATORS TO REDUCE AIR POLLUTION AND IMPROVE GASOLINE ECONOMY**

J. Houseman and D. Cerini
Sep. 1975 See also B75-10203
NPO-13560; NPO-13561

Thermal generator, consisting of burner, reaction chamber, and heat exchanger, produces gas from gasoline/air mixture. Units can be utilized with spark ignition engine.

**B75-10209
LOW-COST SOLAR TRACKING SYSTEM**

C. G. Miller and J. B. Stephens
Sep. 1975 See also B75-10210
NPO-13579

Smaller heat-collector is moved to stay in focus with the sun, instead of moving reflector. Tracking can be controlled by storing data of predicted solar positions or by applying conventional sun-sensing devices to follow solar movement.

**B75-10214
APPARATUS FOR MEASURING STATIC COEFFICIENT OF FRICTION UNDER COMPRESSIVE LOADS**

C. L. Haehner and J. L. Tarpley
Oct. 1975
GSFC-11893

Device includes load cell attached to rigid structure. Crosshead directly beneath cell is connected to constant-speed electrical motor. Crossarm supported by crosshead serves as platform on which bodies are tested. Test data are recorded on X-Y recorder which is connected to load cell and motor.

**B75-10234
MULTIPLE-COMPARTMENT VENTING PROGRAM**

L. P. LeBlanc (Rockwell Intern. Corp.)
Oct. 1975
MSC-19428

06 MECHANICS

Computer program solves time-dependent energy and state equations for gas reservoirs, using the solutions of conductor conservation equations as mass and energy rate changes to reservoirs.

B75-10251 **SINGLE RADIAL MAGNETIC BEARING: A CONCEPT**

P. A. Studer
Oct. 1975
GSFC-11978

Proposed bearing has increased stability. Magnetic structure keeps inner and outer bearing halves aligned. Electronic feedback circuit keeps bearing radially centered.

B75-10258 **REDUCING FLOW REQUIREMENTS OF FLUID ACTUATORS**

M. J. Long and S. C. Irick
Oct. 1975

LANGLEY-11540

Method reduces volumetric rate of hydraulic fluid or air to drive actuator at high speed. Method can be used with any positive displacement actuator with multiple chambers.

B75-10259 **TWO-DIRECTIONAL ACTIVE DAMPER**

C. S. Chang (New Technology, Inc.)
Oct. 1975 See also NASA-CR-132550

LANGLEY-11815

Damper system to be used in studies of payload isolation technology is suitable as a laboratory apparatus. It provides easily adjustable damping and acts as multichannel shaker system.

B75-10264 **BRAKING ACTION OF WHEELED VEHICLES IS CONTROLLED AUTOMATICALLY DURING MINIMUM-DISTANCE STOPS**

D. E. Barthlome
Oct. 1975 See also NASA-TM-X-72665

LANGLEY-11897

System prevents tire skid during panic stops. Two mutually dependent accelerometers directly control solenoid valve which regulates braking pressure.

B75-10270 **SUSPENSION SYSTEM FOR LIGHTWEIGHT CRYOGENIC TANK**

J. Lester (Beech Aircraft Corp.) and D. A. Wendling (Beech Aircraft Corp.)
Oct. 1975

MSC-14080

System is composed of three interwoven fiberglass bands that encircle tank surface in basketweave configuration. Fiberglass support is lightweight with low thermal conductivity.

B75-10282 **REMOVAL OF ICE AND MARINE GROWTH FROM SHIP SURFACES: A CONCEPT**

A. J. Bauman
Oct. 1975

NPO-13658

Proposed surface is structured from sections of low-melting-point alloy. Sections are separated by network of passages for compressed air. Ice or barnacles are removed by passing electrical current through alloy and bursts of compressed air through passages.

B75-10284 **IMPROVED AIRCRAFT REACTION NOZZLES**

J. R. Rogers
Nov. 1975

ARC-10906

Reaction control nozzle requires low operating forces and has linear and predictable jet thrust vs nozzle exit area and position. Nozzle thrust vector is controllable by single rotary motion.

B75-10287 **TURBINE DESIGN REVIEW TEXT**

Innovator not given Dec. 1975 See also NASA SP-290. Vols I, II, III

LEWIS-12560

Three-volume publication covers theoretical, design, and performance aspects of turbines. Volumes cover thermodynamic and fluid-dynamic concepts, velocity diagram design, turbine blade aerodynamic design, turbine energy losses, supersonic turbines, radial-inflow turbines, turbine cooling, and aerodynamic performance testing.

B75-10298 **STATIC AEROELASTIC PROGRAM**

J. Roskam (Kansas Univ.)
Dec. 1975

LANGLEY-11602

Set of programs computes geometric, mass, aerodynamic, and structural effects on fighter and transport type aircraft at subsonic and supersonic speeds.

B75-10300 **AMPLIFYING RIBBON EXTENSOMETER**

V. L. Alley, Jr. and A. D. McHatton
Dec. 1975

LANGLEY-11825

Device provides accurate measurement of strain on flexible membranes and fabrics. It is compact and lightweight, has strain-amplification capability up to five, and has an accuracy better than one percent.

B75-10313 **COMPOUND HEAT PIPE OPERATES OVER BROAD TEMPERATURE RANGE**

H. B. McKee (McDouglas Douglas Corp.)
Dec. 1975

M-FS-23329

Device is combination of two or more heat pipes running adjacent to each other. Each pipe carries different working fluid in high-temperature pipe melts and begins to conduct heat.

07 MACHINERY, EQUIPMENT, AND TOOLS

B70-10014 **THERMAL-DIFFERENCE COMPENSATION FOR STRUCTURAL MEMBERS**

BELEW, R. R. DATE- SEP. 1970
M-FS-20433

Aluminum-thermal difference link maintains constant length of strut despite environmental temperature changes. An extension spring decreases load on the compensator drive linkage when strut is in tension, when strut is in compression, a compression spring is used. Perforated titanium outer tube exposes link to external heat.

B70-10028 **HIGH PRESSURE FLOW-RATE SWITCH**

GALE, G. P. DATE- JUN. 1970

NPO-10722

Flow-rate switch adjusts easily over a wide switching range and operates uniformly over many cycles. It adapts easily to control of various fluids and has the possibility of introducing multi-point switching. Novel design features include the tapered spool, balanced porting, capillary-bypass lubrication, and capillary-restriction damping.

B70-10037 **ADJUSTABLE FLOW RESTRICTOR**

TUFTE, R. J. /LTV AEROSPACE CORP./ DATE- SEP. 1970

MSC-13433

Flow-rate restrictor with sharp-edged threads generates turbulence in the fluid flow, providing greater pressure reduction than is possible with a smooth-walled device. It is less susceptible to clogging.

07 MACHINERY, EQUIPMENT, AND TOOLS

B70-10040

DRY-FRICTIONAL SHOCK ABSORBER

TENER, W. M. DATE- SEP. 1970

NPO-11212

Kinetic energy absorber that can safely decelerate a vehicle as it impacts a surface affords minimum rebound, is lightweight and compact, and needs no lubrication or hydraulic fluids.

B70-10050

GAS FLOWMETER

MORRIS, T. F. WELLS, F. E. DATE- AUG. 1970

REAN- SEE ALSO NASA-TN-D-5517

M-FS-20663

Mass flowmeter measures rates of flow of all common gases from purges and collected leaks at leak ports. Without dependence on gravity, it measures rates between 5 and 650 cc/min with pressures ranging from 0.001 to 10 to the minus thirteenth torr at temperatures between 70 and 500 degrees K.

B70-10066

SOLENOID VALVE PERFORMANCE CHARACTERISTICS

STUDIED

ABE, J. T. /MCDONNELL DOUGLAS CORP./ BLACKBURN,

S. DATE- AUG. 1970

M-FS-12458

Current and voltage waveforms of a solenoid coil are recorded as the valve opens and closes. Analysis of the waveforms with respect to time and the phase of the valve cycle accurately describes valve performance.

B70-10068

VIBRATION DAMPING OF MECHANICAL SEALS

HAMMOND, R. R. /N. AM. ROCKWELL CORP./ DATE-

JAN. 1970

M-FS-14160

Bellows seal filled with spherical powder reacts to vibration inputs by absorbing displacement energy through inertia and friction of the particle masses acting on the inside surface of the cylinders.

B70-10072

MECHANICAL CHARACTERISTICS OF THE BOSSLER

COUPLING

BOSSLER, R. B., JR. /KAMAN CORP./ MAYERJAK, R.

J. DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-1241

HQ-10508

Test results indicate the Bossler coupling has unusual capability for accommodating combined axial motion, misalignment, and torque, suitability for applications requiring long life combined with reliability, lightweight, and minimal maintenance, and the ability to survive shock-torque greatly in excess of ultimate continuous torque.

B70-10077

CONTROLLED RELEASE OF FREE-FALLING TEST

MODELS

FIFE, W. J. HOLWAY, H. P. DATE- SEP. 1970

NPO-11314

Releasing device, powered by a drill motor through an adjustable speed reducer, has a spinning release head with three retractable spring-loaded fingers. The fingers are retracted by manual triggering of a cable at the motor end of the unit.

B70-10087

MAGNETIC GEAR BACKUP

SHEPKE, R. A. /GARRETT CORP./ DATE- JAN. 1970

MSC-13408

Backup clutch for magnetic gear operates only in case of slippage. Contacting a pin arrangement in the driven gear, the clutch provides extra force for continuing output. It does not interfere with normal, noncontact action.

B70-10088

TANDEM WHEEL DROP-LEGS FOR STANDARD TRUCK

TRAILER

CANTWELL, W. /MCDONNELL-DOUGLAS CORP./ SELSTAD,

R. DATE- JUN. 1970

M-FS-13466

Tandem wheel drop-leg device provides a semitrailer with fore and aft mobility that allows it to be moved without a prime mover. The

modified drop-legs have trunnion dual wheels and an adjustable brace.

B70-10089

PHENOLIC CUTTER FOR MACHINING FOAM

INSULATION

BLAIR, T. A. /N. AM. ROCKWELL CORP./ MILLER, A.

C. PRICE, B. W. STILES, W. S. DATE- JUN. 1970

M-FS-14170

Pre-pegged fiber glass is an efficient abrasive for machining polystyrene and polyurethane foams. It bonds easily to any cutter base made of aluminum, steel, or phenolic, is inexpensive, and is readily available.

B70-10090

COMPACT, ELECTROMAGNETIC MULTIPLE-STREAM

PUMP FOR LIQUID METALS - DESIGN CONCEPT

DAVIS, J. F. DATE- JAN. 1970

NPO-10755

Pump provides independent liquid-metal streams at a uniform flow rate. The toroidal magnet structure can accommodate any reasonable number of pump circuits. The power requirement is suited to the output voltage of the basic thermionic diode output.

B70-10101

THERMOSTATIC EXPANSION VALVE IMPROVED BY

DUAL PNEUMATIC MODULATION

PRINGLE, G. /CHRYSLER CORP./ DATE- MAY 1970

KSC-10072

Addition of a secondary pneumatic modulation input improves the standard devices used on thermostatic expansion valves. The valves normally meter incoming refrigerant flow through an orifice valve controlled by a valve-actuating diaphragm.

B70-10103

WATER SURFACE DEPTH INSTRUMENT

DAVIS, O. C., IV DATE- APR. 1970

LANGLEY-10576

Measurement gage provides instant visual indication of water depth based on capillary action and light diffraction in a group of solid, highly polished polymethyl methacrylate rods. Rod lengths are adjustable to measure various water depths in any desired increments.

B70-10126

LOW-COST ORBITING GRINDER FOR CUTTING DUCTS

LANG, E. J. /N. AM. ROCKWELL CORP./ DATE- MAY

1970

M-FS-20684

Low-cost, portable machine cuts ducts made from heat-treated alloys. An abrasive wheel, powered by a high-speed air motor mounted on an expandable plug against the inner wall of the duct, gives precise cutting.

B70-10144

IMPROVED MECHANICAL REMOTE CONTROL

ASSEMBLY - CONCEPT

MATICA, S. W. /N. AM. ROCKWELL CORP./ DATE- FEB.

1970

M-FS-16249

Remote control mechanical device is made more efficient by a twisted-ribbon shaft which moves in the casing on dumbbell rollers. Excessive friction and overstressing are eliminated.

B70-10160

NOVEL VALVE FOR RECIPROCATING COMPRESSORS -

CONCEPT

WAGNER, C. E. /N. AM. AVIATION, INC./ DATE- APR.

1970

MSC-15060

Thin ring valve for the inlets and exhausts of reciprocating compressors, and possibly for the inlets of internal combustion engines, encircles the cylinder and operates on the Bernoulli principle.

B70-10165

FOUR-WAY, FULL-THROTTLING VALVE CONCEPT

SHOCKEY, J. S. /SERV. TECHNOL. CORP./ DATE- APR.

1970

MSC-13437

Valve regulates the flow of a fluid over the limits from full flow in one direction to full

07 MACHINERY, EQUIPMENT, AND TOOLS

flow in the opposite direction. At the midpoint valve position both flow paths are closed. Gradually increasing port size on both flow paths results in good throttling characteristics.

B70-10170

UMBILICAL DISCONNECT ACTUATOR

DAVIS, D. P. MC DOUGAL, A. R. DATE- APR. 1970
NPO-11202

Contamination of sensitive equipment when squibs are fired is prevented by O-rings which retain the debris of squib discharge within the disconnect device.

B70-10171

AN ELECTROTHERMALLY ACTUATED MICRO VALVE

CHARLTON, K. W. SIPMAN, R. DATE- JUN. 1970
NPO-10730

Microminiature slide action valve requires power only during actuation and can be used as an on-off or single inlet to alternately selected outlets.

B70-10176

INVESTIGATION OF POSITIVE SHAFT SEALS

PFOUTS, J. O. /N. AM. ROCKWELL CORP./ DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-97143
M-FS-18589

Welded metal bellows secondary seals prevent secondary seal leakage with a minimum number of potential leak paths. High performance seal is obtained by controlling the potentially unstable seal-face movements induced by mechanical vibrations and fluid pressure pulsations.

B70-10193

TWO-SPEED WHEEL-DRIVE SYSTEM WITHOUT LUBRICATION

BURCH, J. L. DATE- SEP. 1970
M-FS-20645

System based on sprockets and toothed belts provides high and low speeds in forward drive and high speed in reverse. It is inexpensive to produce and maintain, light in weight, reliable, and long-lived without lubrication.

B70-10198

HIGH-POWERED AUTOMATIC LATCHING DEVICE

COBIN, J. C. /N. AM. ROCKWELL CORP./ RHODES, L. L. DATE- OCT. 1970
MSC-15474

Latches automatically lock together two remotely controlled bodies when their triggers are engaged by the docking ring of the lesser body. Latches are disengaged by manual actuation of the handle of each latch through two complete cycles. Emergency locking by manual actuation is also provided.

B70-10207

HYDRAULIC BRAKE SAFETY VALVE

HOBSON, Z. A. /N. AM. ROCKWELL CORP./ DATE- APR. 1970
M-FS-16444

Safety device, consisting of three separate fluid chambers, insures that two wheels of a brake system continue to function if a failure occurs.

B70-10228

FAST-ACTING, FOUR-WAY SLIDE VALVE

ABSAHON, J. /N. AM. ROCKWELL CORP./ KIMMEL, M. DATE- APR. 1970
M-FS-18608

Valve is insensitive to fluctuating sense pressure. It remains in full-open position until the supply pressure is removed.

B70-10244

PRECISION CONTROL SYSTEM FOR ENGINE FUEL

HAWKINS, D. E. /N. AM. ROCKWELL CORP./ DATE- NOV. 1970
NPO-12017

System controls two or more pneumatically operated metering valves from common pneumatic source without interaction between valve controls. Unit affords independent metering of liquid from single source to two concurrent applications. Calibration and testing demonstrate complete absence of interaction between valves and corresponding flow rates.

B70-10248

SELF-SEALING PROPELLANT-ACTUATED DEVICE

ELIMINATES ATMOSPHERE CONTAMINATION
HEINEY, O. K. DATE- JUL. 1970
NPO-11013

Device retains internally generated combustion products by a plug which seals the barrel end after projectile ejection. Since no blast wave is produced, only the projectile can disturb the surrounding surfaces and atmosphere.

B70-10279

A LONG-LIVED PRECISION SWITCH ACTUATOR FOR CONTROLLING PUMP-PISTON ACTION

DAVIS, R. R. DATE- JUL. 1970
NPO-10757

Switch mechanism limits the stroke of the piston by stopping the piston motor drive. This allows retention of a fluid sample in an automated wet-chemical analysis system.

B70-10283

A TEMPERATURE-CONTROLLED FLUID FLOW REGULATOR

TOMLINSON, L. E. /N. AM. ROCKWELL CORP./ DATE- AUG. 1970
M-FS-14259

Slide-type valve, constructed of materials having different coefficients of thermal expansion, provides variable flow area as the slides move in relation to each other with temperature changes.

B70-10287

A CONCEPT FOR IMPROVING EFFICIENCY OF MULTISTAGE CENTRIFUGAL PUMPS

GARDY, H. F. /N. AM. ROCKWELL CORP./ DATE- MAY 1970
LEWIS-10966

Multichannel impeller consists of successive stage impellers arranged concentrically without clearances between them. Reduction in friction is predicted to increase pump efficiency by 5 to 10 percent.

B70-10289

SELF-FORMING SHIM OR GASKET FOR MOUNTING HEAVY EQUIPMENT

WALTER, G. W. DATE- MAY 1970
KSC-10504

Soft, cross-serrated aluminum shims are used as mating gaskets between uneven surfaces. Under pressure, the aluminum flows to conform with surface irregularities, forming a plane of uniform bearing.

B70-10291

DEVELOPMENT OF LIGHTWEIGHT CRYOGENIC TANK SUPPORTS

BARLETT, D. H. /BOEING CO./ MC GINNIS, J. C. DATE- MAY 1970
REAN- SEE ALSO NASA-CR-61309
M-FS-20726

Fiber glass honeycomb conical support with integral, tapered-laminate edge members is developed for a liquid hydrogen tank. Special processing prevents collapse of the core and adds rigidity.

B70-10295

INTEGRATED TURBINE-COMPRESSOR PROVIDES AIR FLOW FOR COOLING

FERRI, A. /N. Y. UNIV./ DATE- SEP. 1970
HQ-10442

Modified supersonic turbine cycle provides cooling air to surrounding structures. Simplified mechanical design assures correct balance of air flow, allows direct issue of cool air to the structure, and assists in matching turbine work output to work input required by the compressor.

B70-10302

VOLUMETRIC LEAK DETECTOR

ELSER, M. J. /N. AM. ROCKWELL CORP./ DATE- MAY 1970
MSC-11325

Portable volumetric leak detector measures leakage in the range of 5 to 40 cc/hr. The detector, a fluid displacing apparatus, measures the leakage of gases across valve seats and checks components and systems of components independent of size in relatively short periods of time.

07 MACHINERY, EQUIPMENT, AND TOOLS

B70-10306

LOW HEAT-GAIN CRYOGENIC-LIQUID TRANSFER SYSTEM

HOWS, G. E. /N. AM. ROCKWELL CORP./ WRIGHT, B. J. DATE- JUL. 1970
MSC-15165

Cryogenic-liquid transfer system, containing a ring structure with tensioned small diameter, high strength wires, provides adequate physical support for the piping, minimizes the conductive heat paths between the piping and jacket, and allows for thermal expansion and contraction of the piping.

B70-10312

GAS TURBINE COMBUSTOR INSENSITIVE TO COMPRESSOR OUTLET DISTORTION

HUMENIK, F. NORGREN, C. DATE- JUN. 1970 REAN- SEE ALSO NASA-TN-D-5570
LEWIS-10286

Short-length annular combustor for turbojet engines eliminates change of exit temperature profile. Individual scoops of full annular height control air distribution so that shifts in the radial velocity profile of air entering the combustor will not affect combustion process or alter exit temperature profile.

B70-10313

UNIVERSAL ROUTER CONCEPT

PESCH, W. A. /HAYES INTERN. CORP./ DATE- JUN. 1970
M-FS-20756

Portable universal router can cut holes of large diameter and irregular shapes, machine recesses, and drill holes with certain edge-distance limitations. Rectangular and round holes may be cut without a template.

B70-10320

INEXPENSIVE TAMPER PROOF SAFETY RELIEF VALVE

FRANKENWICH, P. A. /CATALYTIC-DOW/ DATE- AUG. 1970
KSC-10470

Basic relief valve has added safety relief valve capability that relieves overpressure before failure can occur. It may be installed in inaccessible areas with a high degree of reliability, constructed from a variety of materials, and adapted to the user's specific application.

B70-10322

SWIRL-CAN COMBUSTOR SEGMENT

JONES, R. MOYER, H. NIEDZWIECKI, R. DATE- JUN. 1970 REAN- SEE ALSO NASA-TN-D-5597
LEWIS-11082

Combustor produces uniform circumferential and radial combustor exit temperature profiles and high combustion efficiency at high temperature loads. Absence of diluent air entry ports eliminates stress concentration points, low pressure fuel alleviates nozzle fouling, and abundant air at all burning stages reduces smoke.

B70-10339

PORTABLE VIBRATION EXCITER

BEECHER, L. C. /BENDIX CORP./ WILLIAMS, F. T. DATE- SEP. 1970
KSC-10069

Gas-driven vibration exciter produces a sinusoidal excitation function controllable in frequency and in amplitude. It allows direct vibration testing of components under normal loads, removing the possibility of component damage due to high static pressure.

B70-10343

LOW COST LOBED BEARING

SCHULLER, F. T. DATE- SEP. 1970
LEWIS-11076

Separate sectors for each lobed area of the bearing are assembled into the bearing housing individually and bolted tightly against the housing inside diameter. The center of a grinding wheel and the center of the housing are offset, resulting in the desired inner radius and tilt of the sector.

B70-10347

LIQUID CRYOGENIC LUBRICANT

DIETRICH, M. W. TOWNSEND, D. P. ZARETSKY, E. V. DATE- SEP. 1970 REAN- SEE ALSO NASA-TN-D-5566
LEWIS-11075

Fluorinated polyethers are suitable lubricants for rolling-element bearings in cryogenic systems. Lubrication effectiveness is comparable to that of super-refined mineral oil lubricants operating at room temperature.

B70-10348

ELECTROMECHANICAL HAND INCORPORATES TOUCH SENSORS AND TRIGGER FUNCTION

DANE, D. H. DATE- MAY 1970
M-FS-20812

Electromechanical hand incorporates touch sensors, concealed fingers, and a structure that allows the hand to hold a tool on a flat surface. The hands can be mounted on most types of existing manipulators either directly or by means of modified mounting brackets.

B70-10358

TEST FIXTURE INSURES HIGH DEGREE OF ACCURACY IN FLEXURE TESTS

DURAN, E. M. /WESTINGHOUSE ASTRONUCL. LAB./ ELLENBURG, G. W. DATE- SEP. 1970
NUC-10246

Modified die set improves accuracy in load application, minimizes problems of parallelism, and eliminates testing errors normally encountered during flexure tests. Test results are given for a comparison test of the old and new fixtures.

B70-10362

SINGLE-PHASE HEAT TRANSFER IMPROVED BY HELICAL INSERTS IN TUBES

GUTSEIN, M. U. DATE- SEP. 1970 REAN- SEE ALSO NASA-TN-X-52665
LEWIS-11063

Helical-vane insert creates a single, well defined helical flow passage resulting in more reliable predictions and extrapolations of the thermal and hydraulic performance. Insert core houses instrumentation which does not disturb the flow.

B70-10363

HEAT-BARRIER COATINGS FOR COMBUSTION CHAMBERS

CARPENTER, H. W. /N. AM. ROCKWELL CORP./ DATE- SEP. 1970
M-FS-18618

Arc-plasma-sprayed layered coating of graded Inconel and zirconia protects film-coolant ring below injector plate of rocket engine combustion chamber. Interfacial temperature is designed for minimum buildup of stress and to avoid melting of the metal phase in the graded layers.

B70-10368

LARGE-CAPACITY PUMP VAPORIZER FOR LIQUID HYDROGEN AND NITROGEN

HAUSER, J. A. DATE- SEP. 1970
M-FS-20508

Pump vaporizer system delivers 500 standard cubic feet per minute of hydrogen or nitrogen, one system delivers both gases. Vacuum-jacketed pump discharges liquid hydrogen or liquid nitrogen into vaporizing system heated by ambient air. Principal characteristics of the flow and discharge system, pump, and vaporizer are given.

B70-10389

HYDRODYNAMIC SQUEEZE-FILM BEARINGS FOR GYROSCOPES

CHIANG, T. /MECH. TECHNOL., INC./ SMITH, R. L. DATE- DEC. 1970
M-FS-20802

Experimental tests are conducted on squeeze-film bearings by applying electricity to piezoelectric ceramics, causing vibrations at thousands or millions of Hz that are amplified and transmitted to the bearing. Rotor operation through 24,000 rpm without whirl instability proved bearing ability to support rotor weight without hydrodynamic action.

07 MACHINERY, EQUIPMENT, AND TOOLS

B70-10390
FABRICATING SUBSCALE COMPONENTS FOR APPLICATION TO FULL-SCALE PARTS
SPON- INNOVATOR NOT GIVEN /WHITTAKER CORP./ DATE- NOV. 1970
M-FS-20805
Equipment requirements and fabrication methods required for manufacture of large cylindrical boron/epoxy shroud are based on subscale component production methods. Plywrap technique is well suited to fabrication of cylindrical shapes using composite materials. This method offers savings in time, labor, raw materials, and equipment costs.

B70-10391
CORE DRILL* S BIT IS REPLACEABLE WITHOUT WITHDRAWAL OF DRILL STEM - A CONCEPT
RUSHING, F. C. /WESTINGHOUSE ELEC. CORP./ SIMON, A. B. DATE- SEP. 1970
M-FS-20819
Drill bit is divided into several sectors. When collapsed, the outside diameter is forced down the drill stem, when it reaches bottom the sectors are forced outward and form a cutting bit. A dulled bit is retracted by reversal of this procedure.

B70-10400
HYDRAULIC CHARACTERISTICS OF FLOW THROUGH MINIATURE SLITS
POWELL, W. B. RIEBLING, R. W. DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-105897
NPO-11354
Hydraulic characteristics of micro-orifices arrayed in close proximity across the face of a liquid fuel injector are studied. Effects of geometry and flow variables on discharge coefficients and flow regimes are determined, as well as visible characteristics of the emerging liquid streams.

B70-10409
POOLPROOF QUICK-RELEASE LOCKING PIN
NELSON, E. P. /N. AM. ROCKWELL CORP./ OTHMAN, T. E. ZMUDA, L. J. DATE- SEP. 1970
M-FS-18495
Locking pin can be withdrawn only when stress on the joint is negligible. Pin consists of a forward-pointing sleeve, a spring-loaded sliding handle, and a sliding plunger. Plunger movement controls installation and withdrawal of pin.

B70-10416
SMALL HYDRAULIC TURBINE DRIVES
ROSTAFINSKI, W. DATE- OCT. 1970 REAN- SEE ALSO NASA-TN-X-52661
LEWIS-11064
Turbine, driven by the fluid being pumped, requires no external controls, is completely integrated into the flow system, and has bearings which utilize the main fluid for lubrication and cooling. Torque capabilities compare favorably with those developed by positive displacement hydraulic motors.

B70-10418
X-CONNECTORS FOR TUBING - FEASIBILITY STUDY
BRAGG, K. /PARKER AIRCRAFT CO./ FUHRMANN, H. W. DATE- OCT. 1970 REAN- SEE ALSO NASA-CR-93923
M-FS-20827
Connector tests, including 70 deg F leakage and vibration, proof pressure, burst pressure, tensility, thermal shock, high and low temperature leakage, and simultaneous high temperature vibration and leakage, prove feasibility of lightweight 0.5-in. X-connectors for 4500-lb/sq in. service pressures.

B70-10424
MOLECULAR SIEVES CONTROL CONTAMINATION AND INSULATE IN THERMAL REGENERATORS - A CONCEPT
GASSER, M. G. DATE- OCT. 1970
GSFC-10910
Zeolitic molecular sieves prolong the lives of cryogenic engines by preventing contamination of the thermal regenerators on the cold ends of closed-cycle engines. Sieves also serve as thermal insulators by preventing conduction of

heat along regenerators through contiguous disks of mesh.

B70-10455
ACCURATE REASSEMBLY OF SMALL BROKEN TEST SPECIMENS
PARDOE, A. R. /N. AM. ROCKWELL CORP./ PELLETT, H. E. DATE- SEP. 1970
M-FS-16730
Collets hold specimen in place while epoxy resin cements the broken ends, thereby eliminating relative rotation of the fracture faces. The cemented fracture can then be sectioned metallographically.

B70-10465
FLEXIBLE OR RIGID EXTENDING ARM
SIEBERT, C. J. /MARTIN MARIETTA CORP./ DATE- SEP. 1970
MSC-13512
One motion of a manual clamp makes a universally flexible arm instantly rigid in any configuration. Device is locked rigid by meshing of gear teeth, providing great resistance to loading.

B70-10468
DRILLED BALL BEARINGS - AN APPROACH TO EXTENDING BEARING FATIGUE LIFE AT HIGH SPEEDS
ANDERSON, W. J. COE, H. H. DATE- SEP. 1970
REAN- SEE ALSO NASA-TN-X-52747
LEWIS-10856
Reducing the mass of the rolling elements in ball bearings causes a reduction of centrifugal forces and thereby extends bearing fatigue life. Ball mass is reduced by drilling a concentric hole through each ball. Concentricity and finish of the drilled hole can be closely controlled and the balls accurately balanced.

B70-10502
VOLUME-CHECKING TOOL
ERBE, C. J. /IBM/ POULOS, L. J. DATE- SEP. 1970
KSC-10514
Tool, consisting of a graduated storage vessel and a control panel, can determine the amount of gas entrained by fluid in a closed system, the amount of fluid remaining in a dried system of known volume, or the volume of a container of unknown size.

B70-10509
EASY INSERT, EASY RELEASE TOGGLE BOLT FASTENER
KUBOKAWA, C. C. DATE- DEC. 1970
ARC-10140
Releasable pin-type toggle bolt fastener is constructed so that, when positioned in hole, toggle action prevents its removal and locknut anchors it firmly in place. Fastener is easily removed by loosening locknut and retraction of toggle wings.

B70-10516
CONCEPT FOR A GAS OPERATED ACTUATOR
AMBRUSO, A. /BECKMAN INSTR. INC./ DATE- SEP. 1970
NPO-11340
Palladium valve, permeable to hydrogen gas, is used to fill a bellows mechanism from a source of hydrogen to power an actuator. A similar valve provides retraction. The valves have no moving parts and are heat operated. One limitation on the use of this actuator is discussed.

B70-10517
BISTABLE FLUIDIC VALVE IS ELECTRICALLY SWITCHED
FIET, O. O. /TRW SYSTEMS GROUP/ SALVINSKI, R. J. DATE- NOV. 1970
NPO-10416
Bistable control valve is selectively switched by direct application of an electrical field to divert fluid from one output channel to another. Valve is inexpensive, has no moving parts, and operates on fluids which are relatively poor electrical conductors.

B70-10523
COMPRESSION SPRINGS USED FOR VIBRATION ISOLATION

07 MACHINERY, EQUIPMENT, AND TOOLS

NORMAN, R. M. DATE- OCT. 1970
NPO-11012

System that employs opposed pairs of compression springs can be totally compressed to provide a **hard mount** during component installation and adjustment, and can be released to a free-floating condition for vibration isolation during test.

B70-10526

STANDARDS FOR MATERIAL HANDLING AND FACILITIES EQUIPMENT PROOFOLOAD TESTING

BONN, S. P. /N. AM. ROCKWELL CORP./ DATE- SEP. 1970

MSC-15788

Document provides information on verifying the safety of material handling and facilities equipment /MH/FE/, ranging from monorail systems to ladders and non-powered mobile equipment. Seven categories of MH/FE equipment are defined.

B70-10535

SIMPLE TECHNIQUE EXTENDS LIFE OF ANGULAR-CONTACT BALL BEARINGS

ZARETSKY, E. V. DATE- OCT. 1970
LEWIS-11117

Split ring, angular-contact bearing has only one ball path on the inner race and the outer race. Upon failure of either races or balls, bearing is reversed in its housing so that force is applied to opposite points on the races and bearing operation is unaffected by previous failure.

B70-10542

SUPPORT FOR EQUIPMENT - QUICK MOUNTING WITH QUICK RELEASE

CHAMBERLAIN, W. W., II /N. AM. ROCKWELL CORP./ JACOBSON, H. B. DATE- NOV. 1970

MSC-15874

Temporary support device for equipment consists of pin bracket for attachment to item and socket bracket for mounting on any structure. System is adaptable to broad range of temporary storage media. No engagement, release, or adjustment of components is required.

B70-10543

EASY MANUAL OPERATION OF OVERHEAD GARAGE DOORS - A CONCEPT

FULLER, C. J. /BOEING CO./ DATE- NOV. 1970
REAN- SEE ALSO B67-10611

KSC-10555

Manually actuated mechanical device easily raises or lowers two-section overhead garage door. Rollamite principle is used to provide controlled but varying rate of ascent or descent. Device is applicable where vertical shielding or baffling needs to be raised or lowered.

B70-10547

ADJUSTABLE DRILL BAR REPLACES COMPLEX JIGS

COVENTRY, J. H. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970

MSC-15624

Adjustable drill bar incorporates a micrometer screw which, when used in conjunction with standard gage blocks, provides rapid method of drill hole location and reduces time and skill requirements for precision drilling on large surfaces. Device picks up oddly dimensioned tool hole points and acts as sine drill bar.

B70-10548

REPLACEABLE FILTERS AND CONES FOR FLARED-TUBING CONNECTORS

GRANT, L. E. /N. AM. ROCKWELL CORP./ HOWLAND, B. T. DATE- NOV. 1970

MSC-15750

Connector is modified by machining the cone from one end before the fitting is bored to accommodate a metallic-filament type of slip-in filter. Thus, when surface of the cone is damaged, only the cone needs replacement.

B70-10550

SPECIAL WRENCH FOR B-NUTS REDUCES TORQUE STRESS IN TUBING

STEIN, J. A. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970

MSC-15885

Gear-driven torque wrench with bearing support is used to tighten B-nut connection of partially

supported fluid line with minimum stress to adjacent tubing and fittings. Wrench is useful for working with weak or brittle lines such as glass tubing.

B70-10558

PILOT-BOOSTER CONTROL VALVE

MARLEY, D. /PARKER-HANNIFIN CORP./ DATE- NOV. 1970

M-FS-20635

Two-stage, pressure-sensing control valve is designed for servocontrol of 10-inch main tank valve regulating pressure of liquid oxygen in tank and serving to vent tank during filling. Valve uses a negative-rate Belleville spring to cancel positive spring rates of bellows and coil springs.

B70-10559

SAFE SUSPENSION OF SPECIMENS OR CLUSTERS DURING DYNAMIC TESTING - A CONCEPT

HOCH, G. C. /BOEING CO./ RUSSELL, J. B. DATE- DEC. 1970

M-FS-15110

Support system without point supports permits dynamic testing of complex or delicate mechanical units without excessive movement which might cause damage. Motion-sensor pressure-control system regulates inflation of molded rubber bags surrounding test specimen, so that any excessive motion is smothered until test is terminated.

B70-10566

ELECTROTHERMAL FRACTURING OF TENSILE SPECIMENS

BLINN, H. O. /WESTINGHOUSE ASTRONUCL. LAB./ HANKS, J. G. PERKINS, H. P. DATE- DEC. 1970

NUC-10185

Pulling device consisting of structural tube, connecting rod, spring-loaded nuts, loading rod, heating element, and three bulkheads fractures tensile specimens. Alternate heating and cooling increases tensile loading by increments until fracturing occurs. Load cell or strain gage, applied to pulling rod, determines forces applied.

B70-10567

THREE-DIMENSIONAL PANTOGRAPH FOR USE IN HAZARDOUS ENVIRONMENTS

COWPER, C. D. /WESTINGHOUSE ELEC. CORP./ WAGNER, H. A. DATE- NOV. 1970

NUC-10222

Material measurement device is used with radioactive probes which can be approached only to distance of 3 feet. Tracer-following unit is capable of precisely controlled movement in X-Y-Z planes. Pantograph is usable in industrial processes involving chemical corrosives, poisons, and bacteriological hazards, as well as nuclear applications.

B70-10577

FLEXIBLE PIVOT MOUNT ELIMINATES FRICTION AND HYSTERESIS

HIGHMAN, C. O. /BALL BROTHERS RES. CORP./ DATE- NOV. 1970

M-FS-20725

Flexible steel pivot mount, suspended by flat vertical beryllium copper springs, is capable of rotation, free of hysteresis and starting friction. Mount requires no lubrication, is made in varying sizes, and is driven with either dc torque motor or mechanical linkage.

B70-10583

IMPROVED BURST DISK/CUTTER ASSEMBLY

MARTINEZ, J. /AMETEK/STRAZA/ DATE- DEC. 1970
REAN- SEE ALSO B70-10582

KSC-10516

Burst disk/cutter, prewelded before assembly, eliminates external leakage into a vacuum annulus and provides a means for more accurate burst-pressure prediction. Two reverse buckling type configurations are described and test results are given.

B70-10586

DEADWEIGHT CALIBRATION OF PRESSURE GAGES WITHOUT CONTAMINATION

HENSLEY, D. R. /N. AM. ROCKWELL CORP./ DATE- NOV. 1970

M-FS-18690

07 MACHINERY, EQUIPMENT, AND TOOLS

Calibration of pressure gages is accomplished by use of fluid chamber in conjunction with conventional single chamber hydraulic deadweight tester. System eliminates cleaning of gages with liquid oxygen after tests and is simple to construct and operate.

B70-10589

BIDIRECTIONAL FLOW METER

SUTTON, R. P. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970

M-FS-18737

Device provides wide variety of flow metering on a volume demand basis, in either of two directions. Flow is controlled by number, locations, and sizes of orifices and O-rings. Device is useful in pneumatic or hydraulic systems where valve sequence and timing functions vary from point to point.

B70-10595

EFFICIENT PRESSURE-TRANSFORMER FOR FLUIDS

MORANDO, J. A. /CRANE CO./ DATE- DEC. 1970

M-FS-20830

Fluid transformer utilizes fluid under pressure at one level to drive series of free pistons in positive displacement pump. Pump in turn delivers hydraulic fluid at different pressure level to a load. Transformer is constructed of corrosion resistant materials and is extremely light and compact in relation to capacity.

B70-10609

TFE COATING EXTENDS LIFE OF FLEXIBLE METAL COMPRESSOR DIAPHRAGM

GORLAND, S. DATE- NOV. 1970

LEWIS-11113

Tetrafluoroethylene /TFE/ aerosol sprayed onto entire surface of diaphragm acts as film lubricant and permits diaphragm to slide between upper and lower plates in a reciprocating compressor. Flexing occurs over an area rather than about a single line of action and operating life of diaphragm is more than quadrupled.

B70-10610

HYDROGEN-OXYGEN POWERED INTERNAL COMBUSTION ENGINE

CAMERON, H. /VICKERS, INC./ MORGAN, N. DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-255

LEWIS-90264

Hydrogen at 300 psi and oxygen at 800 psi are injected sequentially into the combustion chamber to form hydrogen-rich mixture. This mode of injection eliminates difficulties of preignition, detonation, etc., encountered with carburated, spark-ignited, hydrogen-air mixtures. Ignition at startup is by means of a palladium catalyst.

B70-10635

HIGH AMPLITUDE SINUSOIDAL PRESSURE GENERATOR

ROBINSON, R. E. /BATTELLE MEM. INST./ DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-72656, B66-10031

LEWIS-11241

Generator is an inlet-area-modulated, gas-flow-through device utilizing hydrogen gas and a rotating disk for operation. Design enables generator to produce pressure oscillations as high as 120, 18, and 12 percent of the mean chamber pressure at frequencies of 1, 10, and 15 kHz, respectively.

B70-10636

ADJUSTABLE SUPPORT SPRING

HADLAND, W. O. DATE- DEC. 1970

ARC-10203

Restraining spring mechanism acting against a force has adjustable spring constant, and its performance is not affected by changes in ambient pressure. Natural frequency of device is varied by changing absolute pressures within bellows and may be tuned to prevent coupling while maintaining a given spring constant.

B70-10640

LOW-NOISE FLOW VALVE FOR AIR DUCTS

GALLO, E. A. /SERV. TECHNOL. CORP./ DATE- DEC. 1970

MSC-13441

Valve assembly controls air flow from feeder into main duct, with minimum of turbulence, friction,

pressure differential, and noise. Valve consists of damper, deflector, and spring. Streamlining of damper and deflector merges flow smoothly, while spring keeps damper and deflector in contact and eliminates valve chatter and damping vibrations.

B70-10652

CONTROLLED DROPLET SPRAY GENERATOR

NICHOLLS, J. A. /MICH. UNIV./ DATE- DEC. 1970

REAN- SEE ALSO NASA-CR-72668

LEWIS-11193

Spray generator produces streams of uniform-size droplets issuing at uniform rate by applying an oscillatory disturbance to free liquid jets. Jets of varying diameters can be grouped together and oscillated as a group to produce simultaneous streams of uniform-size droplets.

B70-10653

LONG LIFE, LOW COST BALL VALVE, WITH LIFTED

SEALS AND CARTRIDGE TYPE CONSTRUCTION

CARRIKER, J. W. /AEROJET-GEN. CORP./ FIEWEGER, R. DATE- DEC. 1970

MSC-13430

Ball valve design incorporates modular construction in easy-to-install, easy-to-replace cartridge housing, and a system of cams to lift upstream and downstream seals away from the ball during rotation. Tests conducted on nitrogen tetroxide prove new valve to be more efficient than previous models in preventing leakage.

B70-10668

METHOD OF STABILIZING FLUERIC VORTEX VALVES

AND VORTEX AMPLIFIERS

ERWIN, L. R. /BENDIX CORP./ MC FALL, R. H. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-72423

LEWIS-10553

Inducing losses in the vortex chamber of vortex valves and vortex amplifiers resolves the problem of unstable operation caused by a sufficiently large positive feedback. Induced losses also reduce pressure gain and throttling range of vortex pressure amplifier.

B70-10671

TWIN-SPOOL TURBOPUMPS FOR **LOW** NET

POSITIVE SUCTION PRESSURE OPERATIONS

BAIR, E. K. /AEROJET-GEN. CORP./ CAMPBELL, W. E. FORD, O. I. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-72540

LEWIS-11105

Modified single-shaft turbopump incorporates inducer and main pump, each separately driven at different speeds through coaxial-shaft arrangement. Inducer operates at low speed for low net positive suction pressure, main pump operates at high speed to generate high pressure. This arrangement requires no external control for the inducer.

B70-10679

COMPACT FLUID-FLOW RESTRICTOR

SHEERE, R. W. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970

MSC-15803

Fluid-flow restrictor has degree of restriction easily and accurately controlled during manufacture. Restrictor's flow channel is machined square thread around a solid slug which is shrink-fitted to cylindrical case. One end of case is closed, open end capped, and both ends tapped for tube fittings for fluid flow.

B70-10688

LOW LEAK RATE POPPET-AND-SEAT CHECK VALVE

WHITEN, D. E. /BENDIX CORP./ DATE- DEC. 1970

MSC-13587

Valve leakage due to contaminant entrapment and chattering is effectively minimized by a metallic poppet-and-seat check valve designed for use in extreme environmental and fluid temperature conditions.

B70-10692

RESONANT SYSTEMS FOR DYNAMIC EVALUATION OF

PRESSURE TRANSDUCERS

LIU, C. Y. /BATTELLE MEM. INST./ ROBINSON, R. E. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-72435

HQ-10609

07 MACHINERY, EQUIPMENT, AND TOOLS

Tests were conducted with contrived inlet modulated sinusoidal pressure generator to study possible use in calibrating pressure sensors. Results indicate concept is feasible and applicable to transducer evaluation.

B70-10699
SELF-SEALING, EASILY PURGED QUICK-DISCONNECT HOSE COUPLING
LEYERLE, R. B. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970
MSC-17009

Coupling for pressurized hoses handles gas or liquid, is easily purged, and automatically seals the hose when disconnected. Volatile or toxic materials can be isolated before the connection is broken. This device may interest food processors and manufacturers of fluid delivery systems.

B70-10701
STARTER PROPELLANTS AND AUXILIARY GENERATORS FOR GAS TURBINES
GILL, G. S. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970
M-FS-18813

Study relates geometry of an internally burning, single, solid-propellant grain to propellant characteristics, engine requirements, and selected starting pressure. Study derives curves for selecting propellants to meet specific engine requirements, or for tailoring engine requirements to propellant limitations.

B70-10714
CARRIAGE-RAIL ASSEMBLY FOR HIGH-RESOLUTION MECHANICAL POSITIONING
BOSWORTH, R. H. /BENDIX CORP./ RONEY, B. W. DATE- DEC. 1970
M-FS-20908

Carriage-rail assembly effects extreme resolution and position accuracy with little friction, and is applicable to such apparatus as optical benches, inspection fixtures, machine tools, and photographic equipment. Directions for assembly construction are given.

B70-10728
ABSOLUTE FOCUS LOCK FOR MICROSCOPES
CONE, C. D., JR. LOOP, R. W. TONGIER, M., JR. DATE- DEC. 1970
LANGLEY-10184

Mechanism absolutely immobilizes microscope stage at a preset focus, preserving focus indefinitely. The lock is a second-class lever consisting of a straight body having a fulcrum with a cylindrical bearing surface at one end and a thumbscrew at the other end.

B71-10012
WELDED POLYPROPYLENE LINERS FOR LARGE DESCALING TANKS
ABEL, H. P./N. AM. ROCKWELL CORP./ JAN. 1971
M-FS-18711

Liners for nitric and hydrofluoric acid tanks show no sign of deterioration after 18 months of continuous use. Each side of each edge of the polypropylene sheets is chamfered, and sheets are welded from both sides with polypropylene filler rod and a special hot-air welding torch.

B71-10018
VACUUM-JACKETED ROTARY JOINTS FOR PIPELINES
MURKINNA, R. C./AMETEK, INC./ FEB. 1971 SEE ALSO NASA-CR-107244
KSC-10519

Joint absorbs all significant torque, is as rugged as heavy metallic pipe, and has thermal insulation comparable to length of flexible pipe. Design is adaptable to any pipes transporting gases or liquids, including those which are noxious or corrosive.

B71-10020
STUDY AIDS ACCURACY OF TURBOPUMP AXIAL THRUST ANALYSIS
NIELSON, C. E./N. AM. ROCKWELL CORP./ JAN. 1971
M-FS-18774

Test program to verify theory used in calculating axial thrust uses turbopump instrumented with /a/ proximity transducers for measuring shaft position, /b/ a strain gage thrust bearing

carrier to measure axial thrust, and /c/ internal pressure taps to define component pressure gradients used in thrust calculations.

B71-10023
PEAK WIND SPEED ANEMOMETER /BAROMETER/
CAMP, D. W. KAUFMAN, J. W. TURNER, R. E. JAN. 1971
M-FS-20916

Peak wind speed recording device, which employs a drag disk with two constant-rate springs /high and low/ and a precision clutching mechanism, measures wind speeds from 8 m/sec up to 200 m/sec while retaining permanent record of peak wind. Device withstands temperatures up to 810 K.

B71-10067
CHATTER-FREE CHECK VALVE - A CONCEPT
DUNBAR, J. E./BENDIX CORP./ APR. 1971
MSC-13262

Valve head moves in spiral motion away from seat. Motion is controlled by travel of pin along spiral groove in valve guide. Clearances between pin and groove permit free motion of valve, but effectively dampen vibration and chattering.

B71-10072
SYSTEMS FOR DEAD-RECKONING NAVIGATION AND FOR SIMULATION OF INSTRUMENTAL ERROR - CONCEPTS
GREEN, W. L. APR. 1971 SEE ALSO NASA-TM-X-53953
M-FS-20860

Navigational system for manned lunar vehicles is intended for travel totaling 30 km within 5 km of home base, total distance traveled must be indicated with 2 percent accuracy. Hardware includes two two-degrees-of-freedom gyroscopes, odometers, tachometers, and signal processing equipment.

B71-10080
HIGH-RELIABILITY RELEASE MECHANISM
PARADISE, J. J./LOCKHEED MISSILES AND SPACE CO./ MAY 1971
LEWIS-11233

Release mechanism employing simple clevis fitting in combination with two pin-pullers achieves high reliability degree through active mechanical redundancy. Mechanism releases solar arrays. It is simple and inexpensive and performs effectively. It adapts to other release-system applications with variety of pin-puller devices.

B71-10081
PNEUMATIC AMPLIFIER CONTROLS HIGH PRESSURE FLUID SUPPLY
JOHNSON, H. L. TRADER, A. G. APR. 1971
MSC-12121

Pneumatic servo system has pneumatic amplifier containing novel control valve that provides linear control of the flow rate. Fluid supply is isolated from control pressure.

B71-10083
FLUID SLIP RING TRANSFERS COOLANT TO ROTATING EQUIPMENT
MANS, D. K./LOCKHEED ELECTRON. CO./ APR. 1971
MSC-13451

Rotating fluid coupler, consisting of rotor and housing made of aluminum, that is concentric with electrical slip-ring assembly, transfers cooling fluid to instrumentation undergoing environmental tests on rotating platform. Rotating fluid coupler permits unlimited platform revolutions and eliminates danger of lines being pulled loose from supplies.

B71-10098
HIGH-TEMPERATURE, LONG-LIFE POLYIMIDE SEALS FOR HYDRAULIC ACTUATOR RODS
JOHNSON, R. L. LEE, J./FAIRCHILD HILLER CORP./ LOOMIS, W. E. MAY 1971 SEE ALSO NASA-TM-X-52888, NASA-CR-72563
LEWIS-11212

Two types of polyimide seals are developed for hydraulic actuator rod in low pressure second stage of two-stage configuration. Each seal melts test objectives of twenty million cycles of

07 MACHINERY, EQUIPMENT, AND TOOLS

operation at 534 K. Analytical and experimental study results are discussed. Potential applications are given.

B71-10100
HIGH-TEMPERATURE PUMP-MOTOR ASSEMBLY
COLKER, C./AEROJET-GEN. CORP./ WALDRON, W.
MAY 1971 SEE ALSO NASA-CR-72823, NASA-CR-72824
LEWIS-10256

Assembly pumps liquid sodium-potassium /NaK/ eutectic at 950 K for up to 20,000 hours. Design features include - high operating-temperature capability, zero leakage, process fluid lubricant/coolant, insulation system compatible with ionizing radiation environments, and reliability and long life without maintenance.

B71-10101
REMOTE COUPLING OF AIR LINES
FUCHS, C. E./WESTINGHOUSE ASTRONUCL. LAB/
MAY 1971
NUC-10225

Bullseye coupler is projected pneumatically from one railroad car at the second car's point of connection. System depends on assumption that inaccuracies in relative position of cars do not exceed certain limits. System is useful to oil drilling, marine rescue and salvage, nuclear work and chemical plant operations.

B71-10140
IMPROVED TRANSDUCER FOR SQUEEZE-FILM BEARINGS
HOOGENBLOOM, L./MECH. TECHNOL., INC./
MAY 1971 SEE ALSO B66-10226, B68-10180
M-FS-20826

Transducer amplifies vibrations produced by piezoelectric drivers, creating greater amplitudes than were possible with direct drive devices. Drivers isolated from bearing surfaces result in bearings with high axial load capacity and stiffness, thus, wear on ceramic cylinders is reduced.

B71-10146
SIMPLE, SHOCK-FREE, QUICK RELEASE CONNECTOR - A CONCEPT
JEWETT, H. R., JR.
MAY 1971
LEWIS-11178

Connector concept is based on characteristics of friction between sliding surfaces and consists of two packs of foil strips. Advantages of this connector are - separation is smooth and shock-free, and connector can also act as a seal. Equation for computing tensile load-carrying capability is also given.

B71-10152
AN INVESTIGATION OF TANDEM-ROW, HIGH-HEAD PUMP INDUCERS
ETTER, R. J./HYDRONAUTICS, INC./
JUN. 1971 SEE ALSO NASA-CR-110790
M-FS-21139

Investigation results indicate optimum design is tandem inducer system using supercavitating first stage and subcavitating second stage operating over wide range of suction specific speeds and flow coefficients. Fluid-flow cavitation effects theory and experimental results also apply to other fluid power system designs.

B71-10159
A LIGHTWEIGHT, HIGH OUTPUT SOIL SAMPLER
HOWARD, E. A. IMUS, R. E. STOCKWELL, D. W.
JUN. 1971
NPO-10797

Sampler is useful on or under earth's surface or on sea bottom. Larger sample amount is obtained relative to sampler size and weight and limited particle size-sample material is continuously delivered. Silicone rubber linear in transport tube nearly eliminates grinding or particulate processing during sampling, and reduces required torque.

B71-10173
SERIES-HYBRID BEARING - AN APPROACH TO EXTENDING BEARING FATIGUE LIFE AT HIGH SPEEDS

ANDERSON, W. J. COE, R. H. FLEMING, D. P. PARKER, R. J.
JUN. 1971 SEE ALSO NASA-TN-D-7011
LEWIS-11152

Fluid film bearing of hybrid device consists of orifice compensated annular thrust bearing and self-acting journal bearing. In series hybrid bearing, both ball bearing and annular thrust bearing carry full system thrust load, but two bearings share speed. Operation of system is stable and automatically fail-safe.

B71-10175
RECOMMENDED SAFETY GUIDES FOR INDUSTRIAL LABORATORIES AND SHOPS
ALLISON, W. W.
JUN. 1971 SEE ALSO SC-M-68-378
SAN-10050

Booklet provides references to 29 publications providing information on hazard control and approved safety practices. Areas include pressurized gas and vacuum systems. Guidelines are presented for safeguarding facilities where machinery, equipment, electrical devices, or hazardous chemicals are used.

B71-10178
WALL ATTACHMENT, FLUORIC CROSSOVER 'AND' GATE
HELLBAUM, R. F.
JUN. 1971
XLA-07391

Gate performance is not adversely affected by normal dimensional variations encountered in fabrication and it operates throughout full loading range. Flow from one control must be sufficiently monostable to allow initial attachment and upon switching, return to outer wall. Venting must be adequate.

B71-10207
HYDROSTATIC LIQUID-BEARING FOR PRECISION GYRO
SGAMBATI, R. J./BENDIX CORP./
JUL. 1971 SEE ALSO NASA-CR-102991
M-FS-21138

Unit with 2W power increase and slightly larger overall dimensions performs as well as or better than its gas-bearing counterpart. Liquid-bearings are built by reworking serviceable gas-bearing components /sleeves, endplates, and cylinders/. Hydrostatic bearing is self-centered, requiring no magnetic suspension or centering jewel.

B71-10214
DEVICE PREPARES ALUMINUM SURFACES FOR WELDING
PAULKNER, G. E./IIT RES. INST./ SAPERSTEIN, Z. P.
JUL. 1971
M-FS-20750

Dry machining technique removes original surfaces to obtain contamination free welding surface. Device straddles edge being prepared and aligns with existing edges and adjacent surfaces of workpiece while sensing device regulates cut depth. Description of prototype is given.

B71-10219
SUBMERGED GAS INJECTOR EXPELS CRYOGENIC LIQUIDS FROM TANKS
CONRAD, E. W. JOHNSON, W. R.
JUL. 1971 SEE ALSO NASA-TN-D-4102
LEWIS-11231

Vaporizing small portion of cryogenic liquid into pressurizing gas reduces amount of pressurizing gas required to expel cryogenic liquid from tank. Specific example of injecting helium gas, stored at same temperature of liquid hydrogen, through submerged porous plate directly into liquid hydrogen is described.

B71-10222
VARIABLE-AREA NOZZLE AUTOMATICALLY CONTROLS FLUID FLOW
CONRAD, E. W.
JUL. 1971
LEWIS-11217

Simple, passive nozzle requires no active control system to vary injection area. Injection area changes with changing pressure, thereby allowing greater flow as pressure increases. As pressure drop across nozzle is decreased, spring action of segments causes them to move inward, decreasing the flow area.

07 MACHINERY, EQUIPMENT, AND TOOLS

B71-10233
HYDRAULIC ACTUATOR MOTION LIMITER ENSURES OPERATOR SAFETY
 STEINMETZ, C. P.
 JUL. 1971
 ARC-10131
 Device regulates action of hydraulic linkage to control column to minimize hazard to operator. Primary components of device are flow rate control valve, limiter accumulator, and shutoff valve. Limiter may be incorporated into other hydraulic systems to prevent undue wear on hydraulic actuators and associated components.

B71-10237
PORTABLE LIGHTWEIGHT BANDSAW
 SEARLE, H. J./N. AM. ROCKWELL CORP./
 JUL. 1971
 M-PS-16927
 Bandsaw of aluminum-6061 weighs about five kg and is operable by one or two men. Spiral blade cuts in any direction and at any angle. Hardness of materials to be cut is limited by material and dimension of blade.

B71-10239
IMPROVED METHOD FOR CALCULATING PUMP THERMODYNAMIC SUPPRESSION HEAD
 KAGEYAMA, Y.
 JUL. 1971
 M-PS-20852
 Method of calculation improves by introducing the sound velocity of two phase flow into the equation for the vapor to liquid volume ratio. Comparisons of required net positive suction head and thermodynamic suppression head are made for a head coefficient ratio of 0.98.

B71-10301
HIGH MOBILITY WORK STATION RESTRAINT SUPPORT
 SCHERMERHORN, R. S.
 AUG. 1971
 MSC-12419
 Chair holds man in semistanding posture enabling astronauts to work comfortably with minimum restriction in weightless environment. Seat, angled at 130 deg to back support, twists and swivels up to 20 deg in all directions but forward. Two flexible thigh clips prevent occupant from slipping off.

B71-10302
HOT TAP THERMOWELL INSTALLATION
 ROMERO, C. A.
 AUG. 1971
 MSC-12427
 System permits valve housings or other fillings to be installed in live steam lines or water pipes without interrupting their operation, thus eliminating current tapping restrictions. Two basic assemblies for installation under pressure are described.

B71-10315
REDUCTION OF VALVE LEAKAGE - A CONCEPT
 DOSHI, H. H./TRW SYSTEMS, INC./ SALVINSKI, R. J.
 AUG. 1971
 NPO-12003
 Leakage elimination occurs by increasing pressure on poppet seat, heating poppet plunger or cooling valve body, and then exerting force between 4.45 and 44.5 kN at poppet seat interface. Valves are useful in handling of corrosive fluids.

B71-10328
HERMETICALLY SEALED MOTION TRANSMITTER
 ECKERT, R. L./N. AM. ROCKWELL CORP./
 AUG. 1971
 MSC-17348
 Transmitter allows transmission of rotational or single planar arc motion through hermetically sealed chamber without use of dynamic seals or complex mechanisms. Device may interest pressure vessel designers and those who need to isolate equipment from a hostile environment.

B71-10358
IMPROVED DIAMOND CORING BITS DEVELOPED FOR DRY AND CHIP-FLUSH DRILLING
 DECKER, W. E./WESTINGHOUSE ELEC. CORP./ HAMPE, W. R.
 HAMPTON, W. H. SIMON, A. B.
 SEP. 1971
 M-PS-21111
 Two rotary diamond bit designs, one operating with a chip-flushing fluid, the second including auger section to remove drilled chips, enhance usefulness of tool for exploratory and industrial core-drilling of hard, abrasive mineral deposits and structural masonry.

B71-10412
ULTRATHIN GATE VALVE FOR HIGH VACUUM OPERATION
 UGIANSKY, R. J.
 NOV. 1971
 GSFC-11028
 Thin, compact, high-vacuum gate valve used to join two vacuum systems together demonstrates multiple operation reliability. Valve measurements and non-protruding handle make valve usable in confined areas.

B71-10449
LIQUID-FUEL VALVE WITH PRECISE THROTTLING CONTROL
 MC DOUGAL, A. R. PORTER, R. N. RIEBLING, R. W.
 NOV. 1971
 NPO-10808
 Prototype liquid-fuel valve performs on-off and throttling functions in vacuum without component cold-welding or excessive leakage. Valve design enables simple and rapid disassembly and parts replacement and operates with short working stroke, providing maximum throttling sensitivity commensurate with good control.

B71-10468
PROPORTIONAL PULSED PILOT VALVE
 RUSK, S. J./LOCKHEED MISSILES AND SPACE CO./
 DEC. 1971
 ARC-10228
 Proportional pulsed pilot valve using conventional efficient solenoid valve for pilot stage provides proportional thrust control for cold gas thrusters with zero leakage of main stage.

B71-10479
LASER DEVICE PROVIDES ACCURATE REFERENCE TO TRUE GRAVITATIONAL VERTICAL
 BILLMAN, K. W. LEONARD, E. T./DOT/
 DEC. 1971
 ARC-10444
 Modification of conventional laser provides correct gravitational alignment by utilizing surface pool of mercury as a gravity-sensitive cavity mirror. Laser action is stimulated only when mirrors are normal to the axis of the beam.

B71-10480
TOOL EXPEDITES INSTALLATION OF BNC CONNECTORS
 HARO, P. J.
 DEC. 1971
 ARC-10327
 Tool is devised which holds BNC connector during installation and permits tightening nut without damaging connector.

B71-10481
DISTRIBUTION AND METERING SYSTEM FOR SOIL SAMPLES
 DEBENHAM, C. H./TRW, INC./
 DEC. 1971
 ARC-10429
 Electromechanical assembly with movable hopper, commanded to put soil samples into inlet sorts of sampling valves, distributes metered volumes of soil samples into test cells.

B71-10493
AIR LOCK MECHANISM SPEEDS SPECIMEN TESTING IN HIGH-TEMPERATURE VACUUM FURNACES
 WHITEHEAD, C.
 DEC. 1971 SEE ALSO B68-10135
 LANGLEY-10841
 Mechanism, made of 347 stainless steel, is attached to furnace port by bolted flange. Unit incorporates quick opening, high vacuum valve and associated fittings which provide connections to air lock evacuation and to inert gas supply for

07 MACHINERY, EQUIPMENT, AND TOOLS

quenching specimen after it is withdrawn from furnace into air lock.

B71-10496

SCALE FACTOR GAGE FOR FIBER OPTICS INSPECTION DEVICE
MC MAHON, W./N. AM. ROCKWELL CORP./ SUGG, P. E.

DEC. 1971

MSC-17361

Flexible wire device, fastened along outside of fiber bundle from viewing portion to tip, positions calibrated adjustable gage in field of view. Scale factor is determined from known magnification characteristics of fiber optics system or from graduations on gage tip.

B71-10503

METAL-SHEARING ENERGY ABSORBER

FAY, R. J./DENVER UNIV./ WITTRICK, E. P.

DEC. 1971

HQ-10638

Device, consisting of tongue of thin aluminum alloy strip, pull tab, slotted steel plate which serves as cutter, and steel buckle, absorbs mechanical energy when its ends are subjected to tensile loading. Device is applicable as auxiliary shock absorbing anchor for automobile and airplane safety belts.

B71-10511

HYDRAULIC EXPANSION PROCESS SHAPES LARGE METAL SHEETS

ANDERSON, E./GRUMMAN AEROSPACE CORP./

DEC. 1971

MSC-12432

Process imparts dome shape to titanium sheets and is applicable to shaping other metals. Method is of interest to automobile and aircraft body manufacturers.

B71-10516

GLASS TUBE SPLITTING TOOL

KLEIN, J. A./N. AM. ROCKWELL CORP./ MURRAY, C. D.

STEIN, J. A.

DEC. 1971

MSC-17183

Tool accurately splits glass tubing so cuts are aligned 180 deg apart and reassembled tube forms low pressure, gastight enclosure. Device should interest industries using cylindrical closed glass containers.

B71-10522

ANTI-SLIPPING SYSTEM IMPROVES WIRE SAW PERFORMANCE

GALLO, E. A./SERV. TECHNOL. CORP./

DEC. 1971

MSC-13508

System prevents wire saw slippage by providing sufficient friction to turn idler spools even when turns of wire on spools do not provide sufficient friction. Low cost system is easily applied to existing equipment.

B72-10036

OPTICAL ALIGNMENT OF ELECTRODES ON ELECTRICAL DISCHARGE MACHINES

A. G. Boissevain and B. W. Nelson

1972

XAC-09489

Shadowgraph system projects magnified image on screen so that alignment of small electrodes mounted on electrical discharge machines can be corrected and verified. Technique may be adapted to other machine tool equipment where physical contact cannot be made during inspection and access to tool limits conventional runout checking procedures.

B72-10066

POSITION INDICATING, ROTATING BOOM

A. C. Dibble, F. W. Gibson, J. R. Padelt, and W. S. Saunders

Dec. 1972

LANGLEY-11202

Universal multiplanar position indicating, rotating boom for mounting various instruments or sensors is described. Boom is telescoping, and apparatus is capable of 3 types of rotation controlled by electric motors. Movement may be continuous or incremental.

B72-10095

TUBING CUTTER

A. Giandomenico

1972

NPO-11524

Replacement of opposing smooth rollers with appropriately grooved rollers in manual tubing cutter allows smooth severance of tubing of different diameters and eliminates raised lip around cut end.

B72-10110

HYDRAULIC VALVE LIFTER REMOVER

R. F. Horton

Jul. 1952

M-FS-21377

Threaded rod, mounted in tubular housing which is flanged and expandable at one end, removes valve lifter after removal of valve covers and push rods.

B72-10114

HIGH SPEED, SELF-ACTING, FACE-CONTACT SHAFT SEAL HAS LOW LEAKAGE AND VERY LOW WEAR

J. Zuk, L. P. Ludwig, and R. L. Johnson

Aug. 1972 See also B72-10447; NASA-TN-D-5744; NASA-TN-D-6164; NASA-TN-D-7006

LEWIS-11598

Design adds gas thrust bearing to face of conventional face seal. Bearing lifts seal's carbon face out of contact after startup and establishes thin gas film between sealing surfaces. Operating pressure and speed capabilities are greater than those of conventional face seals.

B72-10117

DISPERSION RING REDUCES INJECTOR ORIFICE-TO-ORIFICE FLOW VARIATION

R. L. Garber (N. Am. Rockwell Corp.) and V. W. Jaqua (N. Am. Rockwell Corp.)

1972

MSC-15953

Technique substantially reduces machine complexity, improves injector performance and is useful for products mixed or homogenized by injector process. Method is applicable to pharmaceutical, food, dairy and petrochemical industries.

B72-10118

THREE-POINT COMPOUND SINE PLATE OFFERS COST AND WEIGHT SAVINGS

A. P. Barras (N. Am. Rockwell Corp.)

1972

MSC-15818

Work piece adjustment fixture reduces size, weight and set-up complexity of alignment platforms used in metal blank machining. Design benefits designers and manufacturers of machine tools and measuring equipment.

B72-10120

DYNAMIC VALVE TO SUPPLY CONSTANT TOTAL THRUST TO TWO ORIFICE JETS

W. H. Egli (Honeywell, Inc.)

1972

ARC-10239

Valve, maintaining constant total flow, is driven mechanically in periodic alterations to yield correspondingly periodic outputs of constant sum. Design is applicable to development of jet flaps for helicopter use and may be useful in a multinozzle system.

B72-10122

UNIVERSAL INVERTED FLEXURE

W. O. Hadland

1972

ARC-10345

Flexure block fabricated from single piece of material minimizes effect of temperature changes and prevents overstressing of the flexing element.

07 MACHINERY, EQUIPMENT, AND TOOLS

B72-10173 VORTEX SERVOVALVE FOR FLUIDIC OR ELECTRICAL INPUT

T. S. Honda (GE)

1972 See also NASA-CR-73304

ARC-10155

Proportional pressure control servovalve consisting of fluid amplifier bellows-driven jet-pipe and two vortex valves operating in push-pull, with a pair of bellows for pressure feedback is tolerant to contaminant particles and meets minimum standby flow requirements for applications such as rocket thruster nozzles.

B72-10174 NEW FULL-COMPLEMENT BALL BEARING LUBRICATION TECHNIQUE

B. Rockower (MIT)

1972

MSC-13850

Undersized spacer balls rub against oil impregnated wiper, pick up lubricant, and transmit it to load carrying balls and raceways.

B72-10178 AIRFLOW DISTRIBUTION CONTROL FOR IMPROVED TURBINE ENGINE PERFORMANCE

A. J. Juhasz and J. D. Holdeman

May 1972 See also NASA-TN-D-6435

LEWIS-11593

Control allows significant diffuser length and weight reduction, reduces combustor exhaust emissions during engine idle, and improves combustor altitude relight capability.

B72-10179 IMPROVED SYSTEM FOR MEASURING SPEED OF ROTATING MACHINERY

E. G. Smith (GE)

1972

ARC-10413

Gear designed with spaces for 61 or 62 teeth but having 1- or 2-tooth gap provides reference point that can be detected electronically and retains convenient count of 60 per revolution obviating need for duplicate electronic equipment.

B72-10197 BILEAF MECHANICAL STRAIN GAGE

L. R. Guist

May 1972

ARC-10303

Bileaf lever detects small deformations by highly magnifying linear displacements. Device is applicable to force measuring instruments, pressure cells, temperature gages, existing strain gages, dial gages, or extensometers. Additional magnification is obtained by cementing a small mirror to mobile end of bileaf.

B72-10211 MINIATURE HIGH PRESSURE REGULATOR

H. W. Wright, Jr. (TRW Systems Group) and W. S.-S. Wang (TRW Systems Group)

May 1972

ARC-10428

Metal bellows, capable of supplying required spring rate and operational stability, replaced diaphragms, sliding seals, and springs in design of small gas regulator.

B72-10216 DETERMINATION OF IMPACT SENSITIVITY OF MATE- RIALS AT HIGH PRESSURES

L. Davis, D. Phippen, J. Stradling, and D. Whitaker (Service Technol. Corp.)

Dec. 1972

MSC-13700

Compact device is used to determine impact sensitivity of material in static, high pressure, gaseous environment. It can also be instrumented to monitor and record pressure, temperature, and striker impact force. Device is used in conjunction with

commercially available liquid oxygen impact tester which provides impact energy.

B72-10264 TURBOPUMP RADIAL AND AXIAL ROTOR SUPPORT SYSTEM

P. S. Buckmann (Aerojet Liquid Rocket Co.)

Jun. 1972

M-FS-21495

Design of thrust balancer minimizes leakage bypass and obviates need for conventional thrust balancer. System allows operation at low flow rates and high thrust capacity at cryogenic temperatures and high pressures.

B72-10283 A CABLE STABILIZER FOR OUTDOOR ELEVATORS

E. J. Davis and B. A. Tolson

Jun. 1972

KSC-10513

Stabilizer, developed for outdoor elevators, prevents cables from swaying in the wind.

B72-10287 COMBINATION THROTTLE AND SHUTOFF VALVE

J. W. Carriker (Aerojet Liquid Rocket Co.)

Jun. 1972

M-FS-21513

Combination of translating sleeve throttle valve and conventional poppet valve provides capability of shutting off flow completely by poppet and sleeve control of the rate of flow. Integration of the two concepts can be accomplished without difficulty and in a manner that requires a minimum of development.

B72-10292 A METHOD FOR CALCULATING THE EFFECTS OF DESIGN ERRORS AND MEASUREMENT ERRORS ON PUMP PERFORMANCE

D. A. Anderson

Jun. 1972 See also NASA-TN-D-5919

LEWIS-11503

Technique has been developed for calculating effects of design errors and measurement errors on pump performance. Error equations and charts are utilized to relate amount of error in given performance parameter to amount of error in given design or measured variable. Error equations were derived primarily for axial flow pumps, but are not limited to axial flow.

B72-10319 TOOL CARRIER

V. A. DesCamp (Martin Marietta Corp.)

Dec. 1972

M-FS-21469

Flexible fingers meshed together in hinged container secure working tools and parts around waist or thigh of workman. Hairbrush-like fingers across carrier interior allow tool placement from top or bottom without visual coordination.

B72-10322 BALL BEARING PROTECTOR

R. A. Burns

Jul. 1972

M-FS-21612

Mechanical device for reducing the stresses imposed on ball bearings when bearings are exposed to forces caused by vibration is described. Bearing protector is press fitted on rotor shaft and slip fitted into bearing housing. Bearing stop which contacts inner race stops shaft and bearing when moving along shaft axis and removes load from ball bearings.

B72-10325 REMOTE WEIGHING DEVICE

J. P. Valinsky (McDonnell-Douglas Corp.)

Jul. 1972

M-FS-21556

Mechanical device for accurate measurement of weight and changes in weight is presented. Diagram of mechanical equipment

07 MACHINERY, EQUIPMENT, AND TOOLS

is illustrated. Construction of system is described and method of operation is analyzed.

B72-10326 TURBULENT MIXING FILM COOLING CORRELATION

A. J. Juhasz and C. J. Marek
Dec. 1972 See also NASA-TN-D-6360
LEWIS-11417

Film cooling effectiveness correlation predicts air flow requirement for cooling gas turbine combustors. Turbulent mixing model accounts for mixing rate between cooling film and hot gas stream. Resulting equation correlates data within plus or minus 20 percent.

B72-10329 PACKAGING CONCEPT FOR LSI BEAM LEAD INTEGRATED CIRCUITS

B. W. Kennedy
Jul. 1972
M-FS-21374

Development of packaging system for mounting beam lead integrated chip circuit on lead frame is discussed. Process for fabricating large scale integration circuits is described. Diagrams illustrating method of construction are included.

B72-10332 NONCONTACT TORQUE MEASUREMENT USING STROBOSCOPIC TECHNIQUES

W. H. Leonard (Grumman Aerospace Corp.)
Jul. 1972
MSC-12282

Noncontact torquemeter measures torsional deflection of rotating shaft and results are viewed on vernier scale. Magnitude of torque must be calculated from measured deflection. Device has no electric connections with the rotating member and is easy to use.

B72-10345 STEM CLUTCH FOR MOTOR DRIVEN VALVE

D. E. Blum and J. F. Wiltens
1972
LRL-10032

Development of mechanical device to reduce possibility of damage to motor driven needle valve is discussed. Mechanical clutch is employed to allow slippage when needle valve reaches limit of travel. Operation of system for various conditions is described.

B72-10348 AN ECONOMICAL VENT COVER

A. C. Lee (McDonnell-Douglas Astron. Co.) and M. D. McDonald (McDonnell-Douglas Astron. Co.)
Jul. 1972
M-FS-20692

Inexpensive formed-plastic vent cover has been developed that allows controlled purge of vent systems and also provides blowout protection. Cover can also be used in relief mode to allow normal system relief flows without disengaging from vent system. Cover consists of two parts made of plastics with varying densities to fit media used and desired pressures.

B72-10352 REMOTE CONTROL FLARE STACK IGNITER FOR COMBUSTIBLE GASES

W. L. Ray
Jul. 1972
M-FS-21675

Device has been designed and developed for igniting nonrecoverable combustible gases and sustaining combustion of gases evolving from various gas vent stacks. Igniter is superior to existing systems because of simplicity of operation, low cost fabrication, installation, operational and maintainability features, and excellent reliability in all phases of required operations.

B72-10355 PERLOAD INDICATING TURNBUCKLE

W. T. Appleberry (McDonnell-Douglas Corp.)
Jul. 1972
M-FS-21488

Low cost, easily manufactured turnbuckle was developed for applying a predetermined load on strap assemblies. Unit consists of sleeve and nut assembled on turnbuckle that is pulled to predetermined load in tension test machine.

B72-10377 SIMPLE TURBINE BALANCING TEST APPARATUS

M. H. Vavra (Astro-Aeron. Propulsion Lab.), J. E. Hammer (Astro-Aeron. Propulsion Lab.), and L. E. Bell (Astro-Aeron. Propulsion Lab.)
Jul. 1972 See also NASA-CR-1967
LEWIS-11658

Simple, inexpensive apparatus has been devised for testing dynamic balance of turbine rotors. No elaborate instrumentation is required and rotor is spun by directing jet of air against blades. Basic principle involved is that of the vibration of a mass on a spring. Apparatus can be used where conventional, expensive balance facilities are not readily available.

B72-10384 CAVITATION DATA FOR HYDRAULIC EQUIPMENT

J. Hord (NBS) and R. O. Voth (NBS)
Jul. 1972
LEWIS-11642

Development of cavitation B-factors for helium, parahydrogen, nitrogen, fluorine, oxygen, refrigerant 114, and water is discussed. B-factor is defined and numerical relationships are established. Mathematical models are included and alternative methods of determining B-factor are explained.

B72-10385 NONCONTAMINATING TECHNIQUE FOR MAKING HOLES IN EXISTING PROCESS SYSTEMS

T. P. Hecker, H. P. Czapor, and S. M. Giordano
Jul. 1972 See also NASA-TM-X-2431
LEWIS-11595

Technique is developed for making cleanly-contoured holes in assembled process systems without introducing chips or other contaminants into system. Technique uses portable equipment and does not require dismantling of system. Method was tested on Inconel, stainless steel, ASTM-A-53, and Hastelloy X in all positions.

B72-10398 PLANETARY ROCK CORER AND DRILL CONCEPTS

R. E. Imus
Jul. 1972
NPO-11416

Several planetary rock corers and drill design concepts have been developed for obtaining subsurface rock samples in future planetary explorations. Tools are designed for unmanned space vehicles. Two devices are rotary impact multiple chisel trepan rock corer and hole drilling tool.

B72-10400 A VALVE CONCEPT FOR REMOTE FLUID FLOW CONTROL

W. J. Flynn (N. Am. Aviation, Inc.)
Jul. 1972
M-FS-16097

Valve concept has been devised which offers lightweight, simplified mechanism capable of automatic control of large number of fluid flow ports. Valve control is achieved with valve stem which is bimetallic device activated by heating coil to open or close selected supply port. Number of controlled ports is limited only by desired physical size of system.

B72-10404 CONTROLLED FLOW ASSEMBLY

A. E. Cohen (McDonnell-Douglas Corp.)
Jul. 1972
M-FS-21716

Incorporation of isolation valves in high pressure oxygen supply system prevents occurrence of shock ignition when valves are

07 MACHINERY, EQUIPMENT, AND TOOLS

opened. Specifications of equipment show flow rates, pressure ratings, and service life. Illustration of equipment is provided.

B72-10414 CHUCK FOR DELICATE DRILLS

C. S. Copeland
Sep. 1972

ARC-10660

Development of oil film technique to couple power between drive spindle and drill chuck for delicate drilling operations is discussed. Oil film permits application of sufficient pressure, but stops rotating when drill jams. Illustration of equipment is provided.

B72-10426 MAGNET-WIRE WRAPPING TOOL FOR INTEGRATED CIRCUITS

T. H. Takahashi
Aug. 1972

NPO-11815

Wire-dispensing tool which resembles mechanical pencil is used to wrap magnet wire around integrated circuit terminals uniformly and securely without damaging insulative coating on wire. Tool is hand-held and easily manipulated to execute wire wrapping movements.

B72-10433 A TOOL FOR CUTTING ULTRA THIN SLITS IN METALS

W. McMahon (N. Am. Rockwell Corp.)
Jul. 1972

KSC-10770

Tool produces slits of 0.0305 mm widths in materials up to RC 50 hardness, minimizes material waste and improves precision. Device may be used for general metal cutting and for producing simulated cracks in metal samples used in fatigue tests.

B72-10434 AIR ASSIST FUEL NOZZLE REDUCES AIRCRAFT GAS TURBINE ENGINE EMISSIONS AT IDLE OPERATION

D. Briehl and L. C. Papathakos
Jul. 1972 See also NASA-TN-D-6404

LEWIS-11512

Reduction in unburned hydrocarbons from jet engine by use of air assist fuel nozzle is discussed. Operation of nozzle for improving combustion efficiency by improving fuel atomization is analyzed. Advantages to be achieved by air assist fuel nozzle are analyzed.

B72-10447 HIGH-SPEED, SELF-ACTING SHAFT SEAL (CIRCUMFERENTIAL TYPE)

L. P. Ludwig and W. F. Hady
Jul. 1972 See also B72-10114; NASA-TN-D-5744

LEWIS-11274

Shaft riding circumferential seal is used with turbine engines under high pressure conditions. Construction of seal is discussed and schematic diagram to show operations is provided.

B72-10459 ADJUSTABLE LOCKING DEVICE

O. J. Fincannon (McDonnell-Douglas Corp.)
Aug. 1972

M-FS-21650

Adjustable locking device is used for taking up end play of shaft without displacing shaft radially. Coincidentally threaded collars fastened to one or both ends of shaft are threaded in and out of one another for adjustment of end play. Intrinsic feature is its ability to be locked in any translatable position without axial displacement of shaft.

B72-10470 BALL DETENT MECHANISM

A. S. Cousin (McDonnell-Douglas Corp.)
Aug. 1972

M-FS-21735

Mechanical device for providing redundancy for critical operation is described. Operation of equipment and details of

construction are discussed. Two illustrations of equipment to show basic and modified configurations are provided.

B72-10475 EFFICIENT BAFFLE PREVENTS OIL BACKSTREAMING IN DIFFUSION PUMPS

J. R. Meneghetti

Aug. 1972

LRL-10025

High vacuum diffusion pump baffle, positioned immediately above pump stack, prevents vaporized pumping oil from entering and contaminating test chamber. Pumping vapors are collected and condensed on the baffle and flow back to pump base reservoir.

B72-10484 SLOT CONFIGURATION FOR AXIAL-FLOW TURBO-MACHINERY BLADES

W. E. Taylor (United Aircraft Res. Labs.)

Aug. 1972 See also NASA-CR-72870

LEWIS-11572

Machining of slot in turbine blades of axial flow turbines to provide flow path between pressure and suction surfaces is discussed. Slot configuration and improvements in blade performance are described. Diagram of blade slot to show geometry of modification is included.

B72-10497 A RAPID, PRECISE, RECIPROCATING-MOVEMENT COLOR FILTER SYSTEM

P. G. Philipps (Electron. Image Systems Corp.), P. Epstein (Electron. Image Systems Corp.), G. Donovan (Electron. Image Systems Corp.), and E. LaWhite (Electron. Image Systems Corp.)
Aug. 1972

GSFC-11255

Unit was designed for moving color filters in and out of position in less than 46 ms. System may be used to record previously derived colors on photorecorder or to scan different color or wavelength components of rapidly passing scene, as in aerial reconnaissance. Rapid, precise reciprocating movement may be useful in purely mechanical and chemical applications.

B72-10498 NO-ERR TYPING AIDS

R. D. Dubois (Boeing Co.) and G. T. Pinson (Boeing Co.)
Aug. 1972

M-FS-15218

Device for aligning paper in typewriter to correct one letter or line of type is discussed. Two types of correcting devices are described and illustrations of the devices are provided.

B72-10499 TANDEM STEERABLE RUNNING GEAR

O. J. Fincannon (McDonnell-Douglas Corp.) and D. L. Glenn (McDonnell-Douglas Corp.)

Aug. 1972

M-FS-22012

Characteristics of steering assembly for vehicle designed to move large components of space flight vehicles are presented. Design makes it possible to move heavy and bulky items through narrow passageways with tight turns. Typical configuration is illustrated to show dimensions of turning radius and minimum distances involved.

B72-10509 A TOOL FOR MEASURING ELEVATOR CABLE TENSION

E. L. Weaver (Bendix Corp.)
Dec. 1972

KSC-10708

Simple tool for measuring relative cable tension is described, which weighs approximately two pounds and can be produced at one-tenth cost of present tools.

B72-10536 HIGH-VOLUME PRESSURE RELIEF VALVE

W. H. Dillard (Bendix Corp.)
Dec. 1972

KSC-10707

07 MACHINERY, EQUIPMENT, AND TOOLS

Valves with counterweights to assist in opening and closing are described, which can release large volumes of gas almost instantaneously, and provide airtight seals.

B72-10537 ADVANCED HIGH-TEMPERATURE ELECTROMAGNETIC PUMP

J. W. Gahan (GE) and A. H. Powell (GE)
Sep. 1972 See also NASA-CR-1949; NASA-CR-1950; NASA-CR-1951

LEWIS-11283

Three phase helical, electromagnetic induction pump for use as boiler feed pump in potassium Rankine-cycle power system is described. Techniques for fabricating components of pump are discussed. Specifications of pump are analyzed.

B72-10538 SELF-ALIGNING, LOW-PRESSURE SEALING POPPET VALVE

R. Gonzalez (N. Am. Rockwell Corp.) and W. A. Bratfisch (N. Am. Rockwell Corp.)
Sep. 1972

MSC-17745

Design and characteristics of poppet valve operated by very low differential pressures to control fluid flow are described. Valve is used to control flow of petroleum, chemical, and aircraft hydraulics where low leakage rates and activation at low pressures are required.

B72-10539 FILM HANDLING SYSTEM FOR LASER SCANNER/RECORDER

A. Maciel, Jr. (Singer-Gen. Precision, Inc.)
Dec. 1972

MSC-14121

System is described for transporting and holding cut or roll 35-mm, 70-mm, 12.50-cm, and 24.13-cm films without replacement of platens or use of tools of any kind.

B72-10542 FILM HOLDER FOR CURVED VACUUM PLATEN

A. Maciel, Jr. (Singer Corp.) and C. E. Hauber (Singer Corp.)
Sep. 1972

MSC-14120

Vacuum apparatus for holding photographic film of various widths against cylindrically curved platens is discussed. Construction details and method of operation are explained. Illustration of equipment is provided.

B72-10569 VISE TO HOLD BONES OR OTHER IRREGULAR OBJECTS

R. H. Dowell
Sep. 1972

ARC-10679

Vise with stationary vee-shaped jaw and segmented notched jaw for holding irregular shaped objects is described. Operation of the device and specific application to holding bones are explained. Diagram of equipment is provided.

B72-10574 SELF-DEPLOYING BOOM

W. T. Tumulty and W. P. Sours
Sep. 1972

GSFC-10566

Development and operation of metal ribbon which acts like self deploying boom are described. Metal ribbon is retained on two rollers for storage and extends into nonretractable tubular structure upon release. Illustration of equipment is provided.

B72-10575 SLITTING FLAT CONDUCTOR CABLES WITH THE SINGLE CUTTING EDGE SLITTER

W. Angele and C. M. Chambers
Sep. 1972
M-FS-20111

Manually operated slitter can cut single slit in flat conductor cable to any desired length. Lateral position of flat conductor cable is adjusted with aid of optical magnifier and cursor glass to ensure that slit is accurately placed between conductors. Multiple slits may be made by repeating procedure for single slit.

B72-10597 PRECISION MACHINING OF STEEL DECAHEDRONS

W. J. Abernathy and J. R. Sealy
Sep. 1972

M-FS-21361

Production of highly accurate decahedron prisms from hardened stainless steel is discussed. Prism is used to check angular alignment of mounting pads of strapdown inertial guidance system. Accuracies obtainable using recommended process and details of operation are described. Photographic illustration of production device is included.

B72-10640 FLUID OPERATED QUICK RELEASE MECHANISM

R. A. Brown (Sperry Rand Corp.)
Oct. 1972

M-FS-20205

Gas operated release mechanism releases load by fluid pressure to provide positive action quick release. Method can be used with large loads and is useful in repetitive cycling functions where shear pins and similar devices would be cumbersome.

B72-10645 FILL AND VENT QUICK DISCONNECT

R. Y. Boerner (McDonnell-Douglas Corp.) and R. W. Hedrick (McDonnell-Douglas Corp.)
Dec. 1972

M-FS-21822

Hydraulic disconnect coupling on ground serving half of spacecraft refrigeration cooling system employs movable center stem for venting and closing nipple poppet. Self sealing poppet quickly connects cooling system to spacecraft without manual work. Recessed sealing surface insures open poppet when stem retracts.

B72-10672 IMPROVED LIP SEAL FOR ROTATING SHAFTS

D. L. Endicott (McDonnell-Douglas Corp.)
Oct. 1972

LEWIS-11602

Sealing efficiency, service life, and seal loading limits of lip seal for rotating shafts are analyzed. Construction of seal and areas of application are described. Specific advantages of improved lip seal over conventional seals are listed.

B72-10678 PORTABLE BEVELING TOOL

R. H. Snowden (N. Am. Rockwell Corp.)
Oct. 1972

M-FS-16863

Portable tool was designed to semiautomatically bevel end surfaces of tubular or cylindrical components. Tool may be used for fabrication of elbow assembly which requires mating flange and elbow by fusion butt welding.

B72-10681 HIGH TORQUE BELLOWS SEAL ROTARY DRIVE

A. J. Diaguila, J. W. Macomber, and D. W. Adams
Oct. 1972

LEWIS-11813

Bellows seal rotary drive device was developed which allows high torque transmission through sealed compartments. Bearing friction which would normally be carried by sealing bellows in comparable devices is absorbed by universal-gimbal joint. It can be used to transmit high torque, low speed, rotary motion through sealed barriers to prevent contamination or escape of fluids.

B72-10685 A CONCEPT FOR UNIVERSAL PLIERS

E. T. Neal (Boeing Co.)

07 MACHINERY, EQUIPMENT, AND TOOLS

Oct. 1972
KSC-10768

By modification in existing design, pliers can be made to have one pair of handles that will accept number of different jaws. Concept is useful for light to medium duty service. Complete set of jaws may be made to suit specific hobbies or applications.

B72-10687
A SHUT-OFF VALVE FOR FLEXIBLE TUBING
W. W. Reyburn (McDonnell-Douglas Corp.)
Dec. 1972
M-FS-21731

Design of light weight valve for flexible tubing is described. Valve is hand operated and provides positive sealing in normally closed position. Diagram is provided to show construction of valve. Principles of operation are explained.

B72-10688
CYLINDRICALLY SHAPED ROPE LADDER
C. S. Range (N. Am. Aviation, Inc.)
Oct. 1972

M-FS-16319
Cylindrical shaped ladder is rope net held in cylindrical configuration by supporting metal hoops which are spaced at vertical intervals along ladder. Rope ladder is easily handled and transported.

B73-10001
A FLEXIBLE CRUCIFORM JOURNAL BEARING MOUNT
A. E. Frost (Mechanical Technol., Inc.) and W. A. Geiger (Mechanical Technol., Inc.)
Nov. 1973 See also NASA-CR-121098
LEWIS-11035

Flexible mount achieves low roll, pitch and yaw stiffnesses while maintaining high radial stiffness by holding bearing pad in fixed relationship to deep web cruciform member and holding this member in fixed relationship to bearing support. This mount has particular application in small, high performance gas turbines.

B73-10008
CARBIDE FACTOR PREDICTS ROLLING-ELEMENT BEARING FATIGUE LIFE
J. L. Chevalier (Army Air Mobility R & D Lab.) and E. V. Zaretsky
Mar. 1973 See also NASA-TN-D-6835
LEWIS-11940

Analysis was made to determine correlation between number and size of carbide particles and rolling-element fatigue. Correlation was established, and carbide factor was derived that can be used to predict fatigue life more effectively than such variables as heat treatment, chemical composition, and hardening mechanism.

B73-10047
FATIGUE TESTING DEVICE
F. E. Eichenbrenner and L. A. Imig
Feb. 1973
LANGLEY-10426

Anti-buckling assembly prevents buckling of sheet metal fatigue specimen when axial compressive load is applied. It provides for cyclic heating and cooling of specimen during testing. Assembly permits tests at two locations on specimen. Device has ports for visual, optical, or photographic monitoring of fatigue crack propagation in test specimen.

B73-10070
REDUNDANT SCREWJACK
R. W. Benjamin (Rockwell Intern. Corp.)
Aug. 1973
JSC-19200

Device uses differential gears to drive either one of two nut-screw assemblies. In event that one assembly jams, second assembly is driven at twice its normal rate with no loss in overall performance.

B73-10098
BEAM LEAD FORMING TOOL
P. W. Clemons (Sperry Rand Corp.)

Feb. 1973
M-FS-22133

Tool was designed for table-top manual operation that can bend leads to any desired angle up to 90 degrees. It can be readily adapted to electrical, hydraulic, or pneumatic operation. This innovation may be of interest to electronics, sheet metal, and appliance industries.

B73-10110
GEYSERING INHIBITOR PIPE
F. S. Howard
Jun. 1973
KSC-10615

Smaller concentric pipe is welded to main pipe beginning above bottom of isolation valve and terminating in storage tank at top. There is continuous circulation of fluid which maintains fluid temperature below boiling temperature of liquid oxygen.

B73-10124
MAGNETOCALORIC PUMP
G. V. Brown
Aug. 1973 See also NASA-TM-X-52983
LEWIS-11672

Very cold liquids and gases such as helium, neon, and nitrogen can be pumped by using magnetocaloric effect. Adiabatic magnetization and demagnetization are used to alternately heat and cool slug of pumped fluid contained in closed chamber.

B73-10125
ELECTROMAGNETIC CONNECTOR
W. C. Gardner (Rockwell Intern. Corp.)
Mar. 1973
JSC-17420

Connector pair consists of two iron cores brought together a short distance from each other. Each core is wound with insulated wire. Ac signal is connected through the pair across the gap by magnetic induction. Device can be used underwater or in flammable atmosphere.

B73-10190
FLOATING BAFFLE TO IMPROVE EFFICIENCY OF LIQUID TRANSFER FROM TANKS
F. S. Howard
Jun. 1973
KSC-10639

When liquid tank is full, baffle is held up against a stop on top of shaft to prevent restriction of flow from outlet. As tank is being emptied, baffle, floating on top of liquid surface, descends with liquid level toward outlet until it reaches its bottom stop. Baffle prevents gas pull-through until practically all liquid is emptied from tank.

B73-10193
MULTIHEAD MEASURING TAPE
D. L. Posey
Jun. 1973
LANGLEY-11266

By using multihead measuring tape, procedure to obtain length and angle measurement on either wood or metal stock is reduced to one step. Length and angle of measurement can be locked in on measuring device for repetitive measurements. Measuring tape can be used for layout work or to duplicate length and angle of existing stock.

B73-10203
LEAK DETECTOR-MEASURER
J. T. Sawyer
Jun. 1973
M-FS-21761

Detector locates leaks from inside pressurized cabins. Head is placed flush against area being tested. Should leak be present, most air inside detector housing will escape. Diaphragm will then flex into chamber and push electrical contact together, closing circuit and turning on warning light.

07 MACHINERY, EQUIPMENT, AND TOOLS

B73-10204

ADVANCED ACTION MANIPULATOR SYSTEM (ADAMS)

D. A. Kugath (GE), D. H. Dane, and H. T. Blaise
Jun. 1973

M-FS-22022

Manipulator offers improved performance over other models in its category. It features larger force and reach capabilities and is readily convertible for underwater use. Unique kinematic arrangement provides extremely large working envelope. System has six degrees of motion: azimuth joint, shoulder joint, upper arm rotating joint, elbow joint, wrist pitch, and wrist twist.

B73-10216

A PROPOSED HAND-TOOL ASSEMBLY FOR ROBOTS

D. H. Dane and H. T. Blaise
Aug. 1973 See also B73-10204

M-FS-22266

Terminator Kit Assembly (TKA) includes all features that mechanical manipulator needs to use hand tools for maintenance, repair, or assembly work. Tool box holds hand tools and, on command, releases them to hand interface which accepts and operates them. TKA is being studied as possible prosthetic device.

B73-10250

SELF-ADJUSTING ASSEMBLY JIG

M. J. Haaser
Dec. 1973

LEWIS-12034

Jig adjusts for thermal expansion and contraction to hold parts being joined under constant pressure and in correct alignment during entire joining operation. Jig is simple and easy to use, durable and maintenance free. Several methods may be used to join parts of many sizes and shapes.

B73-10324

UNIVERSAL DRILL JIG

E. J. Stringer (Rockwell Intern. Corp.)
Oct. 1973

M-FS-24464

Inexpensive jig can steadily guide drill at selected angles to flat plane from any direction. Jig uses two mutually perpendicular bevel bodies, each corresponding to interval settings. Drill block has spline on one side to engage groove on bevel body at selected angle. Angles are set by loosening wing nuts, tilting drill block to desired angle until spline engages groove, and tightening nuts.

B73-10329

SMALL PORTABLE SPEED CALCULATOR

J. L. Burch and J. C. Billions
Oct. 1973

M-FS-22638

Calculator is adapted stopwatch calibrated for fast accurate measurement of speeds. Single assembled unit is rugged, self-contained, and relatively inexpensive to manufacture. Potential market includes automobile-speed enforcement, railroads, and field-test facilities.

B73-10335

VARIABLE LOAD INDICATOR

W. T. Appleberry (McDonnell Douglas Corp.)
Oct. 1973

M-FS-21728

Weighing device measures loads as a function of its elongation. Device is compact, simple, and inexpensive. It does not require presetting and will measure any load from zero to its yield point. Because of its low cost relative to other load indicators such as strain gauges, device can be used as turnbuckle for tensioning straps, rods, or cables where accurate preloading is critical.

B73-10369

EMERGENCY-ESCAPE DEVICE

P. M. Broussard
Oct. 1973

M-FS-22720

Relatively simple inexpensive device uses reeled steel cable, is controlled by automotive-type shock absorber, and allows safe descent from burning building. Device is cheap to manufacture and assemble and requires neither skill, special knowledge, or athletic ability to operate. It is reliable and fireproof and can be deployed instantly.

B73-10412

DESIGN HANDBOOK FOR GASEOUS FUEL ENGINE INJECTORS AND COMBUSTION CHAMBERS

D. F. Calhoun (Aerojet Liquid Rocket Co.), I. Ito (Aerojet Liquid Rocket Co.), and D. L. Kors (Aerojet Liquid Rocket Co.)
Dec. 1973 See also NASA-CR-121234

LEWIS-12154

Results of investigation of injection, mixing, and combustion processes using gaseous fuels and oxidizers have been summarized in handbook presenting succinct design procedures for injectors and methods for estimating combustion efficiency, chamber heat flux and stability characteristics. Handbook presents two approaches to injector and combustion chamber design: empirical and analytical.

B73-10413

COLLAPSIBLE PISTONS FOR LIGHT-GAS GUNS

R. N. Teng (McDonnell Douglas Corp.)
Dec. 1973

JSC-13789

Moving and expandable parts of gun consist of pump-tube diaphragm, piston, launch-tube diaphragm, and sabot projectile. As a result of improved piston design, pressure cycle has been significantly improved by smoother buildup, increasing muzzle velocities up to 50%.

B73-10415

POPPET VALVE TESTER

G. F. Tellier (Rockwell Intern. Corp.)
Dec. 1973 See also NASA-CR-120976

LEWIS-11655

Tester investigates fundamental factors affecting cyclic life and sealing performance of valve seats and poppets. Tester provides for varying impact loading of poppet against seat and rate of cycling, and controls amount and type of relative motion between sealing faces of seat and poppet. Relative motion between seat and poppet can be varied in three modes.

B73-10416

CONTAINER SEAL FOR DUSTY ENVIRONMENT

R. S. Nevin, Sr. (Martin Marietta Corp.)
Dec. 1973

LANGLEY-10962

Method maintains cleanliness of joint-sealing surfaces under dust-laden conditions. This is accomplished by keeping seal and sealing surface covered with sliding plastic rings, which slide out of the way when a joint is seated.

B73-10433

TOOL FOR INSTALLING OR EXTRACTING SMALL BULBS IN LIMITED-ACCESS SPACES

E. B. Snyder and J. H. Parker
Dec. 1973

Langley-11543

Installing and extracting component of tool is plastic tubing with inside diameter which provides snug fit over bulb. Other components, which provide sturdiness and ease of operation, consist of metal tube, with collar near one end, and plunger, with knob on one end and Teflon tip on the other.

B73-10450

FAIL-SAFE BIDIRECTIONAL VALVE DRIVER

H. Fujimoto
Feb. 1974

NPO-11958

Cross-coupled diodes are added to commonly used bidirectional valve driver circuit to protect circuit and power supply. Circuit may be used in systems requiring fail-safe bidirectional

valve operation, particularly in chemical- and petroleum-processing control systems and computer-controlled hydraulic or pneumatic systems.

B73-10461
INJECTOR HAS NO BACKSPASH

W. B. Powell
Jan. 1974

NPO-13208

Passages of injector have been modified to eliminate backspashing. All fluid is expelled in downstream spray fan. Result is that face of injector is completely free of liquid obstructions.

B73-10463
FERROFLUID SEPARATOR FOR NONFERROUS SCRAP SEPARATION

R. Kaiser (Avco Corp.) and L. Mir (Avco Corp.)
Mar. 1974

LANGLEY-11523

Behavior of nonmagnetic objects within separator is essentially function of density, and independent of size or shape of objects. Results show close agreement between density of object and apparent density of ferrofluid required to float it. Results also demonstrate that very high separation rates are achievable by ferrofluid sink-float separation.

B73-10472
A METHANOL/AIR FUEL CELL SYSTEM

W. J. Asher (Exxon Corp.)
Mar. 1974 See also B73-10472; B73-10473; B73-10475; B73-10489

M-FS-22541

High power-density, self-regulating fuel cell develops electrical power from catalyzed reaction between methanol and atmospheric oxygen. Cells such as these are of particular interest, because they may one day offer an emission-free, extremely efficient alternative to internal-combustion engines as power source.

B73-10473
AN ELECTROCHEMICAL ENGINE

W. J. Asher (Exxon Corp.)
Mar. 1974 See also B73-10472; B73-10475; B73-10489

M-FS-22542

Thin-electrode fuel cell, with electrodes arranged in circular shape, can provide power for new electrochemical engine. With this system, a safe high-voltage engine may be constructed. Since each electrode assumes a potential relative to electrolyte, and since there are no electrolyte paths between cells, any number of cell stacks can be connected in series.

B73-10489
FUEL-CELL HEAT AND MASS PLATE

W. J. Asher (Exxon Corp.)
Mar. 1974 See also B73-10472; B73-10473; B73-10475
M-FS-21318; M-FS-21319

Plate, serving as heat pipe, can be built into cell to control temperature and water inventory. Plate consists of matrix, filled with liquid water, and a space, filled with water vapor. Both matrix and space extend beyond fuel-cell stack so heat and water may be removed as necessary.

B73-10521
APPARATUS FOR CUTTING ELASTOMERIC MATERIALS

A. B. Corbett
Mar. 1974

NPO-13146

Sharp thin cutting edge is held in head of milling machine designed for metal working. Controls of machine are used to position cutting edge in same plane as vibrating specimen. Controls then are operated, making blade come into contact with specimen, to cut it into shapes and sizes desired. Cut surfaces appear mirror-smooth; vibrating mechanism causes no visible striations.

B74-10008
DESIGN CRITERIA MONOGRAPH FOR LIQUID PROPELLANT GAS GENERATORS

Innovator not given Mar. 1974 See also NASA-SP-8081
LEWIS-12139

Monograph reviews and assesses current design practices, and from them establishes firm guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort. Main emphasis of monograph is on bipropellant gas generators using hydrogen peroxide and hydrazine monopropellants.

B74-10009
VERTICAL COPY CAMERA SYSTEM PROVIDES PHOTOGRAPHS FROM ERTS-1 IMAGERY

R. J. Schertler and R. E. Texler
Apr. 1974

LEWIS-12140

Versatility of commercially-available camera system permits wide range of enlargement (up to 10X) and reduction (down to 1/8) to be achieved with standard lenses. Use of easily interchangeable camera backs permits photographic formats from 35 mm to 10.2 X 12.7 cm (4 x 5 in) and permits easy use of black and white and color films and Polaroid materials.

B74-10010
DESIGN CRITERIA MONOGRAPH FOR PRESSURE REGULATORS, RELIEF VALVES, CHECK VALVES, BURST DISKS, AND EXPLOSIVE VALVES

Innovator not given Apr. 1974 See also NASA-SP-8080
LEWIS-12168

Monograph reviews and assesses current design practices, and from them establishes firm guidance for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort. Five devices are treated separately. Guides to aid in configuration selection are outlined.

B74-10014
DESIGN CRITERIA MONOGRAPH ON TURBOPUMP SHAFTS AND COUPLINGS

Innovator not given May 1974 See also NASA-SP-8101
LEWIS-12204

Monograph reviews and assesses current design practices, and considers all aspects of turbopump system shaft dynamics peculiar to and necessary to shaft and coupling design. Associated components (bearings, housing, etc.) that influence shaft or coupling design are treated to extent necessary to define that influence.

B74-10020
PROCESS TO RESTORE OBLITERATED SERIAL NUMBERS ON METAL SURFACES

S. G. Young, B. Parker (Sacramento State Univ.), and W. J. Chisum (Calif. State Dept. of Justice)
Jun. 1974 See also B71-10099; NASA-TM-X-52929; NASA-TM-X-68257
LEWIS-12085

Metal smeared into grooves of serial numbers by grinding or filing can be cleaned out by process called cavitation. Ultrasonic vibrator generates very high frequency vibrations in water which create millions of microscopic bubbles. Cavitation bubbles impact metal surface at thousands of pounds per square inch pressure. Metal particles filling grooves are broken away.

B74-10023
MODULAR SUPPORT BLOCKS FOR FLUID LINES

J. M. Dimino (Rockwell Intern. Corp.) and R. D. Deskin (Rockwell Intern. Corp.)
Apr. 1974

MSC-19335

Modular line block comprises matched modular elements machined to accept fluid lines of different diameters. Modules can support different fluid-line configurations. Top and bottom surfaces are machined to accept dovetail strip used for holding modules together. End modules have holes drilled through to accept fastening screws.

07 MACHINERY, EQUIPMENT, AND TOOLS

B74-10031
PRECISION GLASSCUTTER
D. S. Coombs
May 1974

LANGLEY-11604
Glass is positioned against preset stops; and glasscutter, which is permanently mounted in carrier support by cutter guide rails, is used to scribe glass at predetermined length. Glass is placed against predetermined groove at opposite end to correspond with setting of cutter carrier support and it is broken on end of cutter base.

B74-10039
CONTROL OF ELASTICITY IN CAST ELASTOMERIC SHOCK/VIBRATION ISOLATORS

L. Owens and C. Bright
Jul. 1974

KSC-10850

Elasticity is determined by isolators physical dimensions and by type of elastomer used. Once elastomer is selected and cast between two concentric tubes of device, isolator elasticity will remain fixed. Isolators having same dimensions can be built to different elasticity requirements using same elastomer.

B74-10062
IMPROVED CIRCUMFERENTIAL SHAFT SEAL

L. P. Ludwig and T. N. Strom
Jul. 1974 See also NASA-TN-D-7130
LEWIS-11873

Comparative tests of modified and unmodified carbon ring seals showed that addition of helical grooves to conventional segmented carbon ring seals reduced leakage significantly. Modified seal was insensitive to shaft runout and to flooding by lubricant.

B74-10105
SHUTOFF AND THROTTLING VALVE

L. G. Hays
Aug. 1974
NPO-11951

Leaktight shutoff, precise flow control, and very low pressure drop are incorporated in all-metal valve designed for operation under extreme temperatures. Valve constructed with refractory metal is intended for control of high-temperature liquid cesium, but has applications related to control of high- and low-temperature liquids and gases.

B74-10148
DYNAMOMETER FOR MEASURING MACHINING FORCES IN TWO PERPENDICULAR DIRECTIONS

I. A. Sutherland
Sep. 1974

M-FS-22899

Published report discusses development of two-component force dynamometer which is used for dynamic measurement of machining forces in cutting and thrust directions. Resulting data suggest that faster metal-cutting machines may be developed that have reduced vibrations.

B74-10164
BOLT INSTALLATION TOOL FOR TIGHTENING LARGE NUTS AND BOLTS

A. R. McDougal and R. M. Norman
Sep. 1974
NPO-13059

Large bolts and nuts are accurately tightened to structures without damaging torque stresses. There are two models of bolt installation tool. One is rigidly mounted and one is hand held. Each model includes torque-multiplier unit.

B74-10237
MECHANICAL ROD PEENING
E. J. Minter and V. P. Caruso
Dec. 1974
M-FS-23047

Tool is inexpensive and gives repeatable results. It is modified commercially-available rod-type weld slag removal gun and is pneumatically operated by regulated compressed air supply.

B74-10240
A BAND CLAMP WITH A SPRING TOGGLE LEVER

M. Simmonds (ATO, Inc.)
Dec. 1974

MSC-14736

Clamp could have several applications, as it provides tolerance for both expansion and contraction. It might be useful with firemen's breathing apparatus and luggage racks and other freight-carrying equipment. Also, using same piece as handle and spring reduces production costs by reducing number of parts.

B74-10266
SELF-REGENERATING DESICCANT SYSTEM

K. G. Anthony and E. P. Herndon
Jan. 1975

M-FS-23057

Compact system uses inherent diurnal cyclic airflow in system and energy of sun as drying heat. System requires no power for operation, has no moving parts to wear out, requires no blowers or manifolds, and is relatively inexpensive to produce.

B74-10269
NEW INSULATION ATTACHMENT METHOD ELIMINATES COMPATIBILITY BONDLINE STRESSES

W. C. Schneider
Jan. 1975

MSC-12615

Auger-shaped single-point fastener attaches rigid surface insulation tiles to orbiter shuttle spacecraft. Method can be used to bond wide variety of materials, including insulation, elastomers, and fibrous materials. Since insulation is attached at only one point, insulation and structure are free to form without inducing bond separation.

B74-10292
MECHANICAL SOLAR MOTOR: A CONCEPT

L. A. Hein and W. N. Myers
Feb. 1975

M-FS-23062

Motor is proposed to convert radiation from sun directly into mechanical energy. Motor utilizes thermal expansion of liquid, heated by sun, as driving force. Unlike most thermally powered systems, it does not require that liquid be converted into vapor.

B74-10297
STRAIN GAUGE SENSITIVITY IMPROVED BY USING A COMPOSITE BEAM

R. H. Silver and S. H. Kalfayan
Feb. 1975

NPO-13170

Composite beam connected to strain gauge and mounted on test specimen is capable of amplifying small strains by factor of 10. Tests indicate that resulting output can be 10 times greater than standard method.

B74-10298
REMOTELY OPERATED GAS-PRESSURE REGULATOR AND SHUTTLE VALVE

E. F. Koch
Feb. 1975
NPO-13201

Valve features precise gas-pressure regulation and shuts off flow by remote control. Valve is made up of regulator valve cavity and spring-compression adjusts cavity. Elements in regulator cavity are conventional and include high-pressure inlet, ball which mates with seat, push rod, and pressure-sensing diaphragm.

B75-10011
DESIGN CRITERIA MONOGRAPH ON TRANSMISSION SEALS

S. T. Hayden (Sikorsky Aircraft) and C. H. Keller, Jr. (Sikorsky Aircraft)

Apr. 1975 See also NASA-CR-120997

LEWIS-12403

Guide is based on experience obtained in wide variety of applications using lip, circumferential, and face seals. Particular attention is given to capabilities and lubrication of various seal types. Special limitations as a result of storage requirements, quality control, installation, operation, and removal are discussed.

B75-10054

LOW-COST TOOL SET FOR REMOVING BRAZED FITTINGS

A. Giandomenico

Apr. 1975

NPO-13495

Set includes crimping tool and pull tube. Crimping tool is modified vise-grip pliers which has special jaws designed to crimp fittings. Pull tube has single thread on each end. Tube can be used once on each end before discarding.

B75-10078

FERROLUBRICANTS

A. F. Whitaker

May 1975

M-FS-23151

Ferrolubricants have magnetized angstrom-size iron particles which stick oil to moving surfaces at all times, significantly reducing frictional wear. Magnetic fluids can be produced in families of various fluids having widely-varying chemical and physical properties.

B75-10241

SAFETY MANAGEMENT OF A COMPLEX R&D GROUND OPERATING SYSTEM

J. Connors and R. A. Mauer

Oct. 1975 See also NASA-TM-X-71697

LEWIS-12559

Report discusses safety program implementation for large R&D operating system. Analytical techniques are defined and suggested as tools for identifying potential hazards and determining means to effectively control or eliminate hazards.

B75-10249

POSITION SENSING MATERIALS WOUND ON A REEL

R. M. Muller

Oct. 1975

GSFC-11902

Electro-optical counter measures number of layers of web wound on reel and indicates layer number and web position digitally, without physically contacting reel or requiring numerical interpolation from mechanical readout device.

B75-10276

RELIABILITY COMPUTATION FROM RELIABILITY BLOCK DIAGRAMS

P. O. Chelson and E. Y. Eckstein (VIP Engineering)

Oct. 1975

NPO-13304

Computer program computes system reliability for very general class of reliability block diagrams. Four factors are considered in calculating probability of system success: active block redundancy, standby block redundancy, partial redundancy, and presence of equivalent blocks in the diagram.

B75-10322

FAST SEMIAUTOMATIC DIMENSIONAL TEST SET AND DATA LOGGER

G. E. Meunier (Rockwell Intern. Corp.)

Dec. 1975

MSC-19554

System measures and records tolerance deviations of thermal-protection ceramic tiles in less than 30 seconds. Accuracy of the machine is within 0.001 inch.

B75-10334

SIMPLIFIED HEAT ENGINE

W. H. Higa

Dec. 1975

NPO-13613

In Sterling-cycle heat engine, pneumatic system is used to drive displacer/regenerator, eliminating mechanical linkages and valves.

08 FABRICATION TECHNOLOGY

B70-10015

MEASURING THE CONDUCTOR SPACING IN FLAT CONDUCTOR CABLES

ANGELE, W. DATE- AUG. 1970 REAN- SEE ALSO

NASA-TM-X-53843

M-FS-20560

Interference method produces a moire pattern having a shape correlated with the lead spacing. A continuous check of the spacing is possible if the material between the leads is translucent. Technique is quick, accurate, convenient, and simple to operate.

B70-10019

USE OF ACRYLIC SHEET HOLDS FOR ELASTOMERIC PRODUCTS

HEISMAN, R. M. /N. AM. ROCKWELL CORP./ KOERNER,

A. E. MESSINEO, S. M. DATE- JUN. 1970

MSC-15636

Holds constructed of acrylic sheet are more easily machined than metal, are transparent to ensure complete filling during injection, and have smooth surfaces free of contamination. Technique eliminates flashing on molded parts and mold release agents.

B70-10038

SPLIT RADIUS-FORM BLOCKS FOR TUBE BENDERS

LANGE, D. R. /N. AM. ROCKWELL CORP./ SEIPLE, C.

W. DATE- MAY 1970

MSC-15773

Two-piece, radius-form block permits accurate forming and removing of parts with more than a 180 degree bend. Tube bender can shape flexible metal tubing in applications dealing with plumbing, heating, and pressure transmission lines.

B70-10041

SPINARC GAS TUNGSTEN ARC TORCH HOLDER

BRACE, D. F. /N. AM. ROCKWELL CORP./ CROCKETT,

J. L. DATE- AUG. 1970

MSC-15646

Semiautomatic welding torch enables operator to control arc length, torch angle, and spring tension when welding small diameter aluminum tubing. Tungsten is preset for the weld to make arc initiation easier and to eliminate searching for the joint through a dark welding lens.

B70-10044

MODIFIED FACEPLATE ASSEMBLY FOR STUD-WELDING GUN

JOHNSON, R. E. /N. AM. ROCKWELL CORP./ DATE-

JUL. 1970

M-FS-16725

Ventilated barrel assembly aids installation of studs on narrow uneven weld lands. The modified faceplate permits proper aligning of the percussion stud-welding gun in any position and on a smaller surface, and it maintains gap setting without any other adjustment.

B70-10120

SALVAGING SURFACE-DAMAGED ALUMINUM CASTINGS

HANNA, T. L. /N. AM. ROCKWELL CORP./ DATE- MAY

1970

M-FS-18789

Repair operation for damaged aluminum parts includes anodizing the part, removing the oxide layer, filling the pit or scratch with copper, capping the fill with cadmium, and hand polishing.

08 FABRICATION TECHNOLOGY

B70-10121

A METHOD FOR OBTAINING HIGH DUCTILITY IN CRITICAL AREAS OF ALUMINUM CASTINGS
STRANGELAND, M. L. ZUECH, R. A. /N. AM. ROCKWELL CORP./ DATE- APR. 1970
M-FS-18705

Wrought aluminum alloys provide high-strength substitute in the damaged area of aluminum castings. The segment can either be welded to the cast alloy or built in with a heat-treatable welding rod.

B70-10127

IMPROVED ELECTRON-BEAM WELDING TECHNIQUE
SCHUMACHER, B. /WESTINGHOUSE ELEC. CORP./ DATE- JUN. 1970
M-FS-20714

Electron-beam generator produces high quality welds without vaporization by relying on the mobility and hydrodynamic properties of the material in its liquid phase. The power density of the beam is relative to the speed of the workpiece, producing an inclined weld-front.

B70-10136

BUTT WELDER FOR FINE GAGE WIRE
KABANA, W. B. DATE- AUG. 1970
LANGLEY-10103

Device welds fine gage wire 0.001-in. in diameter. It permits welding of thermocouple junctions of the same size with straight sections adjacent to the junctions. Electrode arrangement provides constant pressure on the joint during welding while fully supporting the wires to prevent buckling or movement.

B70-10155

APPLICATIONS OF GAP WELDING
ADAMS, G. D. DATE- AUG. 1970
M-FS-20715

Gap welding of electronic interconnections yields high strength joints, is easy to use, and allows visual inspection of the welding process. It is easily adaptable to automated circuit assembly.

B70-10194

INTERMOLECULAR BONDING OF METALS OR ALLOYS BY THERMOCHEMICAL DECOMPOSITION
WILSON, R. /MARTIN-MARIETTA CORP./ DATE- JUN. 1970 REAN- SEE ALSO NASA-CR-80721
M-FS-13823

Various metals and alloys are bonded at temperatures below their recrystallization temperature with a Ni-Fe-C alloy grown by thermochemical vapor deposition from organometallic plating compounds. Process time is short, the joints are strong, and microthrowing power is good.

B70-10202

SURFACE TREATMENT FOR VALVE SEATS
MAC GLASHAN, W. F., JR. DATE- SEP. 1970
NPO-10779

Valve with embedded fine particles of diamond in the metal surface of the valve seat resists galling, corrosion, erosion, and cold welding. Diamond powder has an average particle diameter of 0.01 micron and is used with a standard fine diamond polishing compound.

B70-10215

INORGANIC BONDING OF SEMICONDUCTOR STRAIN GAGES
WOODRUFF, N. L. /KULITE SEMICONDUCTOR PROD., INC./ DATE- JUL. 1970 REAN- SEE ALSO NASA-CR-100015
GSFC-10833

Inorganic bonding materials minimize outgassing and improve electrical and mechanical properties of semiconductor strain-gage transducers in high-vacuum and high-temperature operations. The two basic methods described are ceramic-glass-bonding and metallic bond formation between the strain gage and the substrate.

B70-10241

PREVENTION OF CRACKING OF SOLDERED JOINTS IN ELECTRONIC ASSEMBLIES
BEASLEY, B. DATE- AUG. 1970
M-FS-20544

Printed circuit board design allows for thermal stressing of the soldered joints during many thermal cycles. Components* leads should be cleaned, tinned, and freed of particles that prevent solder adherence, have a thin conformal coating, and have an air space between the coating and the body of the component.

B70-10331

FABRICATION OF HOLLOW BALL BEARINGS BY DIFFUSION WELDING
MOORE, T. J. DATE- JUN. 1970
LEWIS-11026

Two steel hemispheres are diffusion welded in an atmosphere of 0.00002 torr at a temperature of 2130 degrees F for 4 hours with a pressure of 4 psi holding the hemispheres together. Weld is accomplished with only microdeformation.

B70-10342

FIBERGLASS HONEYCOMB ELEMENTS FORMED QUICKLY AND CHEAPLY
SMITH, R. H. /NORTHROP CORP./ DATE- AUG. 1970
REAN- SEE ALSO NASA-CR-66301
LANGLEY-10125

Cookie cutter device initiates production of identical, double-contoured fiber glass elements used as shock absorbers. Three-bladed edges convert triangular honeycomb elements into hexagonal shapes which are then stamped to desired length by concave and convex dies. Sandpaper smoothing completes the process.

B70-10367

IMPROVED WELDING OF RENE-41
NUÑEZ, S. /N. AM. ROCKWELL CORP./ DATE- SEP. 1970
M-FS-18821

Gas-tungsten arc welding with a filler of Rene-41 produces strong welded joints. When Rene-41 is used, resistance to strain-age cracking is greatly increased by post-weld solution annealing in an inert atmosphere. Mechanical properties of Rene-41 and Hastelloy-W are compared.

B70-10397

NONDESTRUCTIVE SONIC TESTING OF ADHESIVE-BONDED COMPOSITES
CAUSTIN, E. L. /N. AM. ROCKWELL CORP./ DATE- OCT. 1970 REAN- SEE ALSO B69-10366
M-FS-20793

System detects and determines the location, depth, and areas of crushed core or of breaks in bonding between core and adhesive, adhesive and face sheet, or face sheet and external doubler. It is applicable to honeycomb panels of metal and/or plastics and to metal-to-metal laminates.

B70-10412

IMPROVED ELECTRON BEAM WELDING TECHNIQUE
SCHUMAKER, B. W. /WESTINGHOUSE ELEC./ DATE- SEP. 1970
M-FS-20753

Energy transferred from the source to the workpiece is maximized by relying on the mobility of the material in its liquid phase. This permits more beam energy to transfer to the weld front.

B70-10417

TESTING OF BRAZED AND WELDED CONNECTIONS OF STAINLESS-STEEL TUBING
CAHILL, J. B. /BROWN ENG. CO./ DATE- SEP. 1970
REAN- SEE ALSO NASA-CR-61310
M-FS-20806

Test procedures and results are given for three types of semipermanent sleeve-type connections for stainless-steel tubing. Subject to the limited resistances to corrosion and vibration, all three types are found to be suitable for extremes in reliability and environment, if given close control during manufacture.

B70-10428

HIGH-TEMPERATURE **HYDROSTATIC** EXTRUSION
HUNT, J. G. /NUCL. METALS, INC./ RICE, R. W. /BOEING CO./ DATE- SEP. 1970
NPO-10811

Quasi-fluids permit hydrostatic extrusion of solid materials. The use of sodium chloride, calcium fluoride, or glasses as quasi-fluids reduces handling, corrosion, and sealing problems, these

materials successfully extrude steel, molybdenum, ceramics, calcium carbonate, and calcium oxide. This technique also permits fluid-to-fluid extrusion.

B70-10429

HIGH EXPANSION COEFFICIENT GLASSES CAN BE SEALED TO COMMON METALS

CAMP, F. E. /WESTINGHOUSE ELEC. CORP./ CHAMPMAN, J. W. HIRAYAMA, C. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-72520

LEWIS-10698

New series of high expansion coefficient glasses can be sealed by fusion onto hot surfaces of metals and alloys. Glasses have relatively low working temperatures, good chemical durability, and can be used in electrical insulators and feedthroughs to fluid or vacuum systems.

B70-10430

HIGH TEMPERATURE GLASS COATINGS FOR SUPERALLOYS AND REFRACTORY METALS

CHAPMAN, J. W. /WESTINGHOUSE ELEC. CORP./ GREKILA, R. B. HIRAYAMA, C. MATTOX, D. M. DATE- DEC. 1970 REAN- SEE ALSO NASA-CR-72520

LEWIS-10700

New glasses are used as protective coatings on metals and alloys susceptible to oxidation at high temperatures in oxidizing atmospheres. Glasses are stable and solid at temperatures up to 1000 deg C, adhere well to metal surfaces, and are usable for metals with broad range of expansion coefficients.

B70-10466

NONDESTRUCTIVE ASSESSMENT OF PENETRATION OF ELECTRON-BEAM WELDS

HARMON, T. J. /N. AM. ROCKWELL CORP./ HILLMAN, J. L. YOST, M. C. DATE- SEP. 1970

MSC-15955

Empirical method correlates penetration of an electron-beam weld with external measurements of the weld. Empirical polygon accurately confirms full-penetration welds while a second, larger polygon provides for penetration of welds near the tip.

B70-10489

IMPROVED REINFORCEMENT FOR OPENINGS IN DIFFICULT FABRICS

BESSETTE, R. J. /ILC IND., INC./ DATE- SEP. 1970

MSC-13554

Plastic film is applied to each side of the fabric and the two films are then fused together with conventional heat-sealing equipment. With the inner area of the fabric cut away, a flexible, sturdy band of material is left around the opening with no raw edges.

B70-10512

MOLDING PROCEDURE FOR CASTING A VARIETY OF ALLOYS

PONTES, M. J. KOURTIDES, D. LEIBFRIE, E. R. DATE- DEC. 1970

ARC-10358

General procedure and molding sand composition for preparing molds usable for casting variety of alloys are developed. Molds are prepared from mixture of sand, sodium silicate binder, and organic liquid ester. Castings of radiographic quality are produced from various alloys.

B70-10513

SYNTHESIS OF DIAMONDS

ESTES, M. F. RASQUIN, J. R. DATE- SEP. 1970

M-FS-20698

Shock wave transmitted through a solid exponential horn generates heat and pressure to convert part of a charge of graphite to diamonds. The shock wave is generated in the apparatus by a complex of magnetic fields and eddy currents.

B70-10514

ULTRASONIC DETECTION OF FLAWS IN FUSION BUTT WELDS

CROSS, B. T. /AUTOMATION IND., INC./ HANNA, K. J. TOOLEY, W. M. DATE- SEP. 1970 REAN- SEE ALSO NASA-CR-61952

M-FS-20824 M-FS-20843

Reliable and accurate Delta technique, a nondestructive ultrasonics method, uses

redirection of energy to detect randomly oriented imperfections in fusion butt welds. Data on flaws can be read from either an oscilloscope or a printout.

B70-10537

HIGH-TEMPERATURE NICKEL-BRAZING ALLOY

POWELL, A. H. /GE/ THOMPSON, S. R. DATE- OCT. 1970

LEWIS-10928

Gold-nickel brazing alloy, with 5 percent indium added to depress the melting point, is used for brazing of nickel-clad silver electrical conductors which operate at temperatures to 1200 deg F. Alloy has low resistivity, requires no flux, and is less corrosive than other gold-nickel, gold-copper alloys.

B70-10544

IMPROVED HEAT-RESISTANT GARMENTS

JOHNSTON, R. S. DATE- DEC. 1970

MSC-12109

Fabrication method for protective clothing eliminates the common heat-short by avoiding the stitch which is common to all layers, and preventing external exposure of any stitch to the outer environment. A unique overlap arrangement is described and additional protective methods are discussed.

B70-10580

SIMPLE BONDING TECHNIQUE FOR HIGH-TEMPERATURE CERAMIC COATINGS

ACCOUNTIUS, O. E. /N. AM. ROCKWELL CORP./ CARPENTER, H. W. ONODA, G. Y., JR. DATE- NOV. 1970 REAN- SEE ALSO NASA-CR-72569

LEWIS-11085

Coatings, consisting of zirconia powder bonded with orthophosphoric acid and a small amount of hydrofluoric acid, are hard, strong, and refractory, resist thermal shock, and provide good thermal protection. After the aqueous coating is applied to a metallic surface, only a 600 deg F cure is required before service.

B70-10594

METAL DRILLING WITH PORTABLE HAND DRILLS

EDMISTON, W. B. /BOEING CO./ HARRISON, H. W. MORRIS, H. E. DATE- DEC. 1970

M-FS-15180

Study of metal drilling solves problems of excessive burring, oversized holes, and out-of-round holes. Recommendations deal with using the proper chemical coolants, applying the coolants effectively, employing cutting oils, and dissipating the heat caused by drilling.

B70-10604

FILLER-WIRE POSITIONER FOR ELECTRON BEAM WELDING

BEAUPRE, W. M. /N. AM. ROCKWELL CORP./ FUEG, L. B. PHILLIPS, J. A. DATE- NOV. 1970

MSC-15637

Miniaturized positioner is installed in any electron beam vacuum chamber for use with wire feed applications requiring filler wire. Horizontal and vertical control of the positioner is maintained from a console while chamber is under vacuum. Device permits more positive positioning of welding filler wire.

B70-10624

REPAIR OF BRAZED STEEL HONEYCOMB-SANDWICH PANELS WITH VERTICAL PINS ONLY

ROWE, J. /N. AM. ROCKWELL CORP./ DATE- DEC. 1970

MSC-15831

Vertical steel tubular pins restore the shear strength of honeycomb panels and improve the quality of the repaired panel. New repair method eliminates diagonal pins. Vertical pins are welded to face sheets, forming **vierendeel Truss** arrangement to transmit shear loads.

B70-10654

HOLOGRAPHIC ANALYSIS OF THIN FILMS

NORDEN, B. N. WILLIAMS, J. R. DATE- DEC. 1970

M-FS-20823

Technique for monitoring deposition of films on surfaces, in place on a real-time basis, reads both the thickness and the uniformity of the deposited film. Holograms are produced from both reflected and transmitted light on one plate.

08 FABRICATION TECHNOLOGY

B70-10663

IMPROVEMENT OF ADHESIVE-BONDED STRUCTURAL JOINTS

EVENSEN, H. A. /WHITTAKER CORP./ DATE- DEC. 1970
REAN- SEE ALSO NASA-CR-108973
M-FS-20876

Investigation is described of methods for obtaining uniform shear stress distribution in adhesives used in double-lap bonded joints. Design rules for reducing adhesive peak shear stresses are listed. Test results of an analysis of straight-lap joint design and stepped-lap joint design are given.

B70-10706

IMPROVED PROTECTION FOR SILICON SOLAR CELLS

BRODER, J. D. DATE- DEC. 1970
LEWIS-11065

Fluorinated ethylene propylene /FEP/ film is substituted for epoxy cement in bonding glass covers to silicon solar cells. Insensitivity of FEP to ultraviolet radiation reduces requirement for filtering and does not impair cell performance. Cell costs are reduced and cover mounting is simplified.

B70-10719

FIXTURE FOR PLATING STRIPPED CONDUCTORS OF FLAT CONDUCTOR CABLES /FCC/

RAMSEY, L. E. DATE- DEC. 1970
M-FS-20122

Fixture supports flat conductor cables /FCC/ while providing electrical contact to stripped ends of cable during electroplating process. Cable is held in the form of a coil.

B70-10723

IMPROVED METHOD FOR CLADDING THE INSIDE OF METAL TUBES

MAAG, W. L. MATTSON, W. F. DATE- DEC. 1970
LEWIS-11174

Creep characteristics of molybdenum at high temperature and stress are utilized to compress tungsten foil liner against inner surface of tantalum alloy cylinder to form bond at interface. Temperature and pressure can be accurately controlled and size of workpiece is limited only by furnace size.

B71-10028

METHOD OF JOINING METALS OF SIGNIFICANTLY DIFFERENT EXPANSION RATES

CALER, W./ROCKETDYNE/ LA SALLE, P. TRAYLOR, J. FEB. 1971
NPO-12076

To join a refractory metal to a dissimilar high-temperature metal, braze a section of high elasticity, high ductility metal /such as columbium or columbium alloy/ between the metals to be joined, using a fork-type joint to hold the braze and transition member in place during expansion.

B71-10045

ULTRASONICS USED FOR HIGH-PRECISION NONDESTRUCTIVE INSPECTION OF BRAZED JOINTS

PETERSON, R. M./AEROJET-GEN. CORP./ MAR. 1971
NUC-10352

Technique detects voids greater than or equal to 0.1016 cm in braze depths of 0.254 cm, detecting voids of smaller dimensions is possible. Internal design ensures control of beam's water path length to within 0.635 cm, this length is critical to system's accuracy.

B71-10048

ACCURATE POINTING OF TUNGSTEN WELDING ELECTRODES

ZIEGELMEIER, P. MAR. 1971
ARG-10449

Thoriated-tungsten is pointed accurately and quickly by using sodium nitrite. Point produced is smooth and no effort is necessary to hold the tungsten rod concentric. The chemically produced point can be used several times longer than ground points. This method reduces time and cost of preparing tungsten electrodes.

B71-10050

CONCENTRIC TUBES COLD-BONDED BY DRAWING AND INTERNAL EXPANSION

HYMES, L. C. STONE, C. C.

MAR. 1971
ARG-90033

Metal tubes bonded together without heat application or brazing materials retain strength at elevated temperatures, and when subjected to constant or cyclic temperature gradients. Combination drawing and expansion process produces residual tangential tensile stress in the outer tube and tangential compressive stress in the inner tube.

B71-10060

HOBEL STRIPPER FOR SHIELDED AND UNSHIELDED FLAT CONDUCTOR CABLE

ANGELE, W. MAR. 1971
M-FS-20120

Stripping tool exposes an area of shield for grounding purposes without removing an area of insulation between terminated shield and exposed conductors. Tool does not require heated blade and is capable of removing small portions of material at a time, to any depth.

B71-10062

THIN SPRAY FILM THICKNESS MEASURING TECHNIQUE

JONES, G. KURTZ, G. W. APR. 1971
M-FS-20842

Thin spray film application depths, in the 0.0002 cm to 0.002 cm range, are measured by portable, commercially available, light density measuring device used in conjunction with glass plate or photographic film. Method is automated by using mechanical/electrical control for shutting off film applicator at desired densitometer reading.

B71-10070

TORCH KIT FOR WELDING IN DIFFICULT AREAS

STEIN, J. A./N. AM. ROCKWELL CORP./ APR. 1971
MSC-15704

Miniature tungsten inert gas welding torch, used with variously formed interchangeable soft copper tubing extensions, provides inexpensive, accurate welding capability for inaccessible joints. Kit effectively welds stainless steel tubing 0.089 cm thick. Other applications are cited.

B71-10073

PROCESS FOR PRODUCING MOLYBDENUM FOIL AND COLLAPSIBLE TUBING

BRETTS, G. R./GE/ GAVERT, R. B. GROSCHKE, G. F. APR. 1971 SEE ALSO NASA-CR-78308
GSFC-10008

Manufacturing process produces molybdenum foil 0.002 cm thick and 305 m long, and forms foil into high-strength, thin-walled tubing which can be flattened for storage on a spool. Desirable metal properties include high thermal conductivity stiffness, yield and tensile stress, and low thermal expansion coefficient.

B71-10076

REFRIGERATED CUTTING TOOLS IMPROVE MACHINING OF SUPERALLOYS

DUDLEY, G. E. APR. 1971
LANGLEY-10488

Freon-12 applied to tool cutting edge evaporates quickly, leaves no residue, and permits higher cutting rate than with conventional coolants. This technique increases cutting rate on Rene-41 threefold and improves finish of machined surface.

B71-10116

METAL-TO-CERAMIC SEALS - A LITERATURE SURVEY

PHILLIPS, W. M. MAY 1971 SEE ALSO AFML-TR-65-143, JPL-TR-34-1420
NPO-11430

Survey of unclassified literature furthers design and development of nuclear thermionic converter seals. Data cover topics which are particularly relevant to thermionics. Data are reviewed and review discussion is presented along with summary of earlier work.

B71-10117

CERAMIC BACKUP RING PREVENTS UNDESIRABLE WELD-METAL BUILDUP

LEONARD, G. E./AEROJET-GEN. CORP./

MAY 1971

NUC-10357

Removable ceramic backup material butted against weld zone back prevents weld metal buildup at that site. Method is successful with manual tungsten-inert gas /TIG/ welding of 316 corrosion resistant steel /CRES/ pieces with 0.76 cm throat diameter and 1.57 cm pipe internal diameter.

B71-10123

INDUCTION BRAZING MANUAL

INNOVATOR NOT GIVEN MAY 1971 SEE ALSO

NASA-PB-183-419

M-FS-14924

Manual presents standards and techniques which are known or are particular to specific industry, and is useful as guide in closing tolerance brazing. Material and equipment specifications, tool setting tables, and quality control data and instructions are included. Since similar standards are available, manual is supplementary reference.

B71-10127

PHOTOSENSITIVE PLASTIC USED TO PRODUCE

THREE-DIMENSIONAL CASTING PATTERNS

WILLIAMS, D. A.

MAY 1971

LANGLEY-10742

Patterns with small lettering and intricate designs are prepared by using two-dimensional artwork, photographic reduction and Dycril. Two-dimensional artwork and photographic processes replace conventional relief work. Artwork size is convenient and does not restrict lettering and design size in casting.

B71-10135

ULTRA THIN GAGE PLASTIC FILM

COX, D. W., JR./SEA-SPACE SYSTEMS, INC./ STRUBLE, A.

D.

MAY 1971

LEWIS-11276

Process utilizing specially modified conventional equipment, with changes in process temperature, pressure, and cooling requirements produces ultra thin 1.56 micron /0.0614 mil/ thick polyethylene film.

B71-10168

PARALLEL-GAP WELDING FOR JOINTS BETWEEN COPPER

CONDUCTORS AND KOVAR

MC DANIEL, G. E.

JUN. 1971 SEE ALSO NASA-TN-D-6236

M-FS-21224

Welding technique produces more reliable joints than soldering. Investigation used different sizes of copper conductors and component lead ribbons, corrosion protection platings, and melting points of metals being joined. Optimum combination is gold-plated component lead ribbons and solder-plated copper conductors.

B71-10199

ALLOY VAPOR DEPOSITION USING ION PLATING AND FLASH

EVAPORATION

SPALVINS, T.

JUN. 1971 SEE ALSO B67-10006, NASA-TM-X-52823

LEWIS-11262

Method extends scope of ion plating technique to include deposition of alloy films without changing composition of plating alloy. Coatings flow with specimen material without chipping or peeling. Technique is most effective vacuum deposition method for depositing alloys for strong and lasting adherence.

B71-10206

INTERPRETATION OF ALUMINUM-ALLOY WELD RADIOGRAPHY

DUREN, P. C. RISCH, E. R.

JUL. 1971 SEE ALSO NASA-TM-X-53939

M-FS-20943

Report proposes radiographic terminology standardization which allows scientific interpretation of radiographic films to replace dependence on individual judgement and experience. Report includes over 50 photographic pages where radiographs of aluminum welds with defects are compared with prepared weld sections photomicrographs.

B71-10212

FABRICATION OF LARGE TUNGSTEN STRUCTURES BY CHEMICAL VAPOR DEPOSITION

KAHLE, V. E./AEROJET-GEN. CORP./ LEWIS, W. J. STUBBS, V. R.

JUL. 1971 SEE ALSO B67-10232, NASA-CR-72742

LEWIS-11239

Process is accomplished by reducing tungsten hexafluoride with hydrogen. Metallic tungsten of essentially 100 percent purity and density is produced and built up as dense deposit on heated mandrel assembly. Process variations are building up, sealing or bonding refractory metals at temperatures below transition temperatures of base metal substrates.

B71-10247

TECHNIQUE FOR THE INTEGRAL CASTING OF PRESSURE

INSTRUMENTATION IN WIND-TUNNEL MODELS

JACKSON, C. E., JR. SUMMERFIELD, D. G.

JUL. 1971

LANGLEY-10812

Wind tunnel models are cast around core consisting of array of tubing. Principal advantage of technique is that greater number of pressure orifices are easily installed, without compromising aerodynamic shape of model. Technique reduces construction cost by about 50 percent.

B71-10253

LOW-TEMPERATURE BONDING OF TEMPERATURE-RESISTANT

ELECTRONIC CONNECTIONS

PELUSO, R. F./MARTIN MARIETTA CORP./

JUL. 1971

M-FS-20909

Bonding of flat metal surfaces utilizes low temperature melting intermediate material, pulse heating, and pressure application to produce strong, electrically conductive bond resistant to melting at temperatures well above melting point of intermediate material. Little or no intermediate material remains at the interface.

B71-10256

PLATING BY GLASS-BEAD PEENING

BABECKI, A. J. HAEHNER, C. L.

JUL. 1971

GSFC-11163

Technique permits plating of primarily metallic substrates with either metals or nonmetals at normal temperature. Peening uses compressed air to apply concurrent streams of small glass beads and powdered plating material to the substrate.

B71-10257

TECHNIQUE FOR IN-PLACE WELDING OF ALUMINUM BACKED UP

BY A COMBUSTIBLE MATERIAL

SPAGNUOLO, A. C.

JUL. 1971

LEWIS-11328

Welding external aluminum jacket, tightly wrapped around inner layer of wood composition fiberboard, in oxygen free environment prevents combustion and subsequent damage to underlying fiberboard. Technique also applies to metal cutting in similar assemblies without disassembly to remove combustible materials from welding heat proximity.

B71-10268

DIFFERENTIAL EXPANSION FITTING FOR CRYOGENIC LIQUID

TANKS

LANDES, R. E./AEROJET-GEN. CORP./ MORRIS, E. E.

AUG. 1971 SEE ALSO NASA-CR-72599

LEWIS-11260

Sliding contact between liner and interior surface of fitting accommodates stresses and strains developed in shell composite and metal liner system. Stresses and strains are transmitted to liner portion which is recessed in fitting and which acts as differential expansion fitting.

B71-10280

WELD BEVELING OF LARGE-DIAMETER PIPES

LIEBENSTEIN, R./BENDIX CORP./

AUG. 1971 SEE ALSO B68-10551, B69-10229, B69-10231

KSC-10550

Technique employs electric drill and newly developed special jig to J-bevel, in the field, ends of pipes measuring between 15.24 cm and

08 FABRICATION TECHNOLOGY

45.72 cm in diameter in preparation for welding. Jig's construction and operation are described.

B71-10293

IMPROVED BRAZING TECHNIQUE FOR PYROLYTIC GRAPHITE
BOGOWITZ, R. G./INTERN. HARVESTER CO./METCALFE, A. G.
AUG. 1971
NPO-12026

Technique uses braze metal and joint design that together compensate for the difficult anisotropic properties of the graphite and are usable at elevated temperatures.

B71-10336

STRONG, EASY-TO-HOLD, SPIRAL BUTTRESS THREAD
HEIER, W. C.
SEP. 1971
LANGLEY-10755

Buttress thread with steep taper connects two molded plastic cylinders without changing wall thickness or sacrificing longitudinal strength at the juncture. Technique lends itself to conventional molding methods.

B71-10338

ELECTROPLATING ON TITANIUM ALLOY
LOWERY, J. R.
SEP. 1971
M-PS-21251

Activation process forms adherent electrodeposits of copper, nickel, and chromium on titanium alloy. Good adhesion of electroplated deposits is obtained by using acetic-hydrofluoric acid anodic activation process.

B71-10354

MODULAR CONSTRUCTION PROVIDES LARGE VOLUME STORAGE FACILITY IN MINIMUM SPACE
FAHNER, T./MCDONNELL DOUGLAS CORP./HARWOOD, O. P.
SEP. 1971
M-PS-13568

Each modular element consists of two hemispherical shells with material removed near their apexes to permit joining by a weldment to form a passage. Elements are welded together at their largest dimensions to form either a straight line continuous or a circular pressure vessel.

B71-10363

CAST SEGMENT EVALUATION
DIEM, H. G./ROCKETDYNE/STUDHALTER, W. R.
SEP. 1971
M-PS-21354

Evaluation program to determine feasibility of fabricating segmented rocket engine thrust chambers using low cost, lightweight castings extends state of the art in areas of casting size and complexity, and in ability to provide thin sections and narrow, deep, cooling channels. Related developments are discussed.

B71-10369

FABRICATION TECHNIQUES FOR THORIA-DISPERSED /TD/ NICKEL
INNOVATOR NOT GIVEN/BELL AEROSPACE CO., C. S. IND./
SEP. 1971 SEE ALSO NASA-CR-72742
LEWIS-11240

Metal spinning forms combustion chamber sections and nozzle sections, arc welding joints sections to form rocket motor. Hastelloy-I as filler results in slightly weaker weld than the TD nickel weld, but permits formation of larger rocket motor than is otherwise possible.

B71-10375

USE OF CERMET THIN FILM RESISTORS WITH NITRIDE PASSIVATED METAL INSULATOR FIELD EFFECT TRANSISTOR
BROWN, G. A./TEX. INSTR., INC./HARRAP, V.
OCT. 1971 SEE ALSO NASA-CR-97459
GSPC-10835

Film deposition of cermet resistors on same chip with metal nitride oxide silicon field effect transistors permits protection of contamination sensitive active devices from contaminants produced in cermet deposition and definition processes. Additional advantages include lower cost, greater reliability, and space savings.

B71-10381

PROTECTIVE COATING FOR SALT-BATH BRAZING
FRANCISCO, A. C. GYORGAK, C. A.
OCT. 1971
LEWIS-90255

Ceramic coating, consisting of graphite, enamel's clay, and algin binder, applied to materials prior to salt bath brazing facilitates brazing process and results in superior joints. Alternate coating materials and their various proportions are given.

B71-10415

FOLDING TOOLS FOR FLAT CONDUCTOR CABLE HARNESSSES
LOGGINS, R.
NOV. 1971
M-PS-20121

Vise grip pliers have detachable metal gripping plates which are changed to accommodate cables from 1 to 3 in. wide and to form any desired fold angle. A second tool squeezes cable along crease to complete the fold.

B71-10416

SPOOL FOR RELEASING AND RETRACTING FLAT CONDUCTOR CABLE
ANGELE, W. CAMPBELL, E. C.
NOV. 1971
M-PS-20234

Spool design and operation permit installation of up to 8 cables on single unit. Heat treating the cables while wound in a coil obtains effective recoil action.

B71-10417

SEATING TOOL FOR PREPARING MOLDED-PLUG TERMINATIONS ON FCC
CHAMBERS, C. M. CORUM, C. C.
NOV. 1971 SEE ALSO B71-10422
M-PS-20123

Hand-operated tool positions and seats window piece and conductor spacer onto conductors of two stripped cables during process of terminating cables with molded plug. Tool accommodates cables up to 3 in. wide and is used in conjunction with folding tools.

B71-10418

DURABILITY TESTER FOR FCC CONNECTORS
CHAMBERS, C. M. MARTINECK, H. G.
NOV. 1971
M-PS-20128

Testing device monitors continuity and resistance of each circuit, it includes springloaded stationary fixture which holds plug, and moving fixture which is driven by small electric motor and is geared to mate and unmate connector 10 times per minute.

B71-10419

PRECISION DIE-PUNCH FOR TRIMMING THE CONDUCTORS OF FLAT CONDUCTOR CABLE
WEEKS, G. E., JR.
NOV. 1971
M-PS-20142

Operation trims conductor to width of 0.004 in. and consistently leaves 0.035 in. spaces between adjacent conductors, adapting cable for termination with standard plug.

B71-10420

FIXTURE FOR MULTIPLE-FCC CHEMICAL STRIPPING AND PLATING
ANGELE, W. NORTON, W. E.
NOV. 1971
M-PS-20237

For chemical stripping, lead tape applied near ends to be stripped protects insulation. Taped ends are submerged half way in stripping solution. For electroplating, both ends of FCC are stripped - top ends for electric contact, others for submersion in electroplating solution.

B71-10421

SPRUE CUTOFF TOOL FOR MOLDED FCC PLUGS
ANGELE, W. CHAMBERS, C. M.
NOV. 1971
M-PS-20236

Spue removal operation is accomplished by positioning plug on tool bed, adjusting blades, and moving handle down for cutting process. Blades are raised to remove trimmed plug.

B71-10422

FOLDING TOOL FOR PREPARING FCC MOLDED-PLUG

TERMINATIONS

CAMPBELL, E. C. CHAMBERS, C. M.

NOV. 1971

M-FS-20116

Assemblies consist of window piece, conductor spacer, insulator, outer seal, and molded portion that integrates all components. Preparation of FCC for molded plug termination requires that terminated ends of conductors in each cable be accurately folded simultaneously into spacer end and groove.

B71-10433

HIGH TEMPERATURE AUTOCLAVE VACUUM SEALS

HOFFMAN, J. R. SIMPSON, W. G. WALKER, H. M.

NOV. 1971

M-FS-21131

Aluminum sheet forms effective sealing film at temperatures up to 728 K. Soft aluminum wire rings provide positive seal between foil and platen. For applications at temperatures above aluminum's service temperature, stainless steel is used as film material and copper wire as sealant.

B71-10435

CARTESIAN-COORDINATE DIMENSIONING FOR PLUMBING SYSTEMS

BURGY, P. A./N. AM. ROCKWELL CORP./

NOV. 1971

M-FS-18867

Nonprogressive dimensioning method specifies Cartesian coordinates for each critical point in detail drawings of precision plumbing and ducting components to avoid tolerance accumulation. Method permits direct fabrication of tubing shapes without necessitating generation of a preproduction tubing mockup.

B71-10455

PRACTICAL METHOD OF DIFFUSION-WELDING STEEL PLATE IN AIR

HOLKO, K. H. MOORE, T. J.

DEC. 1971 SEE ALSO NASA-TN-D-6409

LEWIS-11387

Method is ideal for critical service requirements where parent metal properties are equaled in notch toughness, stress rupture and other characteristics. Welding technique variations may be used on a variety of materials, such as carbon steels, alloy steels, stainless steels, ceramics, and reactive and refractory materials.

B71-10457

MULTIEDGE SLITTER FOR FCC

TUCKER, D. T. WEEKS, G. E., JR.

NOV. 1971

M-FS-20112

Tool cuts multiple slits up to 3 in. long between conductors of flat conductor cables up to 3 in. wide to prepare them for termination on terminal boards or in multipin connectors.

B71-10458

APPARATUS TESTS FLEXURAL DURABILITY OF FCC

CHAMBERS, C. M. NORTON, W. E.

NOV. 1971

M-FS-20113

Device tests electric continuity of flat cable conductors, FCC, in temperature controlled environment. Test method is described.

B71-10459

CABLE INSULATION CUT-THROUGH TESTER

CAMPBELL, E. C. NORTON, W. E.

NOV. 1971

M-FS-20114

Device accurately measures cut-through load within specified time or time when cut-through occurs at specific load. Tests are performed at ambient conditions or in an environmental chamber.

B71-10460

COLD-BLADE STRIPPER FOR POLYIMIDE AND TFE INSULATION ON FCC

ANGELE, W. CHAMBERS, C. M.

NOV. 1971

M-FS-20115

Stripper removes insulation to any desired depth by adjusting the distance between the blade and the

plates on either side of the flat conductor cable, FCC.

B71-10461

HOT-BLADE STRIPPER FOR POLYESTER INSULATION ON FCC

ANGELE, W. CHAMBERS, C. M.

NOV. 1971

M-FS-20117

Stripper incorporates a blade which is electrically heated to a controlled temperature. Heated blade softens and strips insulation from cable while paper ribbon removes insulation material and keeps blade clean for next operation.

B71-10464

HANDLING FIXTURE FOR SOLDERING ROUND WIRES TO FCC

LOGGINS, R. MARTINECK, H. G.

NOV. 1971

M-FS-20118

Fixture holds flat conductor cable and wires in position until after soldering of contacting conductor ends and potting of junctions. Device provides for proper spacing of wires and adequate access for soldered joints during fabrication, and positions mold halves during potting operation.

B71-10465

ROTARY STRIPPER FOR SHIELDED AND UNSHIELDED FCC

ANGELE, W. CHAMBERS, C. M.

NOV. 1971

M-FS-20119

Rotary stripper removes narrow strips of insulation and shielding to any desired depth. Unshielded cables are stripped on both sides with one stroke, shielded cables are stripped in steps of different depths.

B71-10467

EXOTHERMIC BRAZING UNITS

MC CAIG, J. C./WHITTAKER CORP./

NOV. 1971

M-FS-21435

Units are used for repairing and assembling stainless steel tubing. Heat generated by chemical reaction is used to melt brazing alloy and bonded area is not contaminated by the reactants or by-products of the reaction.

B71-10505

MEASURING INTERNAL DIMENSIONS OF SMALL TRANSPARENT OBJECTS

MILLS, S. M. SALMERS, S.

DEC. 1971

LANGLEY-10712

Technique individually photographs first the orifice in the transparent object and then a microscopic scale immersed in a liquid having the same index of refraction as the transparent object. Using a scale photograph, the orifice photograph is measured.

B71-10520

SOLID STATE WELDING OF DISPERSION-STRENGTHENED NICKEL

ALLOYS

HOLKO, K. H. MOORE, T. J.

DEC. 1971 SEE ALSO NASA-TN-D-6493

LEWIS-11388

Two-step solid state welding cycle applied to carefully prepared surfaces of an unrecrystallized alloy prevents loss of parent-metal strength at weld joint of dispersion-strengthened, nickel-chromium alloy.

B71-10523

FOLDABLE PATTERNS FORM CONSTRUCTION BLOCKS

HUBER, W. C. RITTER, D. L./INTERN. PAPER CO./

DEC. 1971

MSC-13860

Building blocks with interlocking tabs can be constructed from flat sheets of material using minimum of tools and equipment. Blocks can be used for storing and shipping supplies to remote areas, then filled with soil and stacked to form inhabitable structures which can be dismantled and reused.

B71-10525

COPPER/NICKEL EUTECTIC BRAZING OF TITANIUM

KUTCHERA, R. E./GE/

08 FABRICATION TECHNOLOGY

DEC. 1971
ARC-10337

Technique joins titanium or one of its alloys to materials, such as iron, nickel or cobalt base material, or to refractory metals. To ensure formation of a satisfactory bond, the temperature, time, environment and pressure must be controlled.

B71-10531
JOINT PRELOAD PROPERTIES OF STRUCTURAL THREADED FASTENERS
BRENNER, H. S./ALMAY RES. AND TESTING CORP./
DEC. 1971 SEE ALSO NASA-CR-103179
N-FS-21453

Proper installation techniques are described and reliable torque-tension values are presented on joint preload /or clamp load/ properties of structural threaded fasteners.

B72-10025 SIMPLE METHOD FOR FORMING THIN-WALL PRESSURE VESSELS

A. L. Erickson and L. R. Guist
1972 See also NASA-TM-X-62043
ARC-10511

Application of internal hydrostatic pressure to seam-welded circular cylindrical tanks having corner-welded, flat, circular ends forms large thin-walled high quality tanks. Form limits expansion of cylindrical portion of final tank while hemispherical ends develop freely; no external form or restraint is required to fabricate spherical tanks.

B72-10041
BONDING TITANIUM TO RENE 41 ALLOY
R. W. Scott (GE)
1972
ARC-10311

Pair of intermediate materials joined by electron beam welding method welds titanium to Rene 41 alloy. Bond is necessary for combining into one structure high-strength-to-density-ratio titanium fan blades and temperature-resistant nickel-base alloy turbine buckets in VTOL aircraft lift-fan rotor.

B72-10058
ALUMINUM FOIL INTERCONNECTS FOR SOLAR CELL PANELS
S. Schwartz (Hughes Aircraft Co.) and L. B. Keller (Hughes Aircraft Co.)
1972

ARC-10374
Commercially available sonic welding system and a specially-designed tip bonds aluminum foil interconnects to titanium-silver solar cell contacts.

B72-10081
LOW-FRICTION BALL-AND-SOCKET
R. E. Imus
1972
NPO-11348

Ball-bearing retainer assembly reduces friction in ball-and-socket mount which replaces gimbals mounting used with spacecraft antennas.

B72-10237
THERMAL ANALOG DEVICE REDUCES MACHINING ERRORS
E. R. McClure
Dec. 1972
AEC-10080

Thermal analog devices predict thermal expansion and contraction of machine structures subjected to various heat inputs. Analog devices correct positioning of machine tools to compensate for distortion of machine frame.

B72-10238
SURVEY OF INFORMATION CONCERNING LARGE DIAMETER DEEP HOLE DRILLING
Innovator not given (Nucl. Defense Res. Corp.) Dec. 1972 See also NVO-423-1
AEC-10051

Data are presented, covering drilling techniques, factors affecting penetration rates, cost estimation, and system improvement. Various drill bits are also discussed.

B72-10252
THERMALLY STABLE STRUCTURAL FRAMEWORK
H. U. Schuerch (Astro Res. Corp.)
Sep. 1972 See also NASA-CR-1973
ARC-10612

Development of structural framework with zero or negligible thermal expansion is discussed. Combination of two types of metallic materials in binary trellis to compensate for thermal expansion is explained. Construction details are presented and illustration is included.

B72-10288
JOINING PRECIPITATION-HARDENED NICKEL-BASE ALLOYS BY FRICTION WELDING
T. J. Moore
Jun. 1972 See also NASA-TM-X-2411
LEWIS-11514

Solid state deformation welding process, friction welding has been developed for joining precipitation hardened nickel-base alloys and other gamma-prime-strengthened materials which heretofore have been virtually unweldable. Method requires rotation of one of the parts to be welded, but where applicable, it is an ideal process for high volume production jobs.

B72-10293
EXPLOSIVE CORD
Innovator not given (Explosive Technol. Co.) Jun. 1972
M-FS-21928

Device, jetcord, is metal-clad linear explosive of sufficient flexibility to allow forming into intricate shapes. Total effect is termed "cutting" with jetcord consistently "cutting" a target of greater thickness than can be penetrated. Applications include sheet metal working, pipe cutting and fire-fighting.

B72-10349
TECHNIQUE FOR PRODUCING WIND-TUNNEL HEAT-TRANSFER MODELS
C. E. DeRose, W. C. Norman, L. Yee, and D. M. Oishi
Dec. 1972
ARC-10658

Inexpensive thin skinned wind tunnel models with thermocouples on certain surface areas were fabricated. Thermocouples were designed for measuring aerodynamic heat transfer in wind tunnels.

B72-10356
NEW COMPRESSION MOLDING PROCESS OF THERMOSETTING PLASTIC COMPOUNDS
W. C. Heier
Jul. 1972
LANGLEY-10782

Process permits molding of longer, thinner bodies, such as cylindrical rocket motors, while maintaining equal or superior physical properties. Major advantages of process are presented.

B72-10359
LOW COST ANTI-GALLING BUSHINGS
E. O. Spencer (N. Am. Rockwell Corp.)
Dec. 1972
LEWIS-11724

Heat shrinkable Teflon tubing is cut to size, slipped onto shaft, heated to shrink tightly to shaft, or machined to final outside diameter size. Shaft bushings fabricated from shrinkable Teflon tubing provide economical close fitting sleeves that prevent galling and contamination in valves.

B72-10374
NONDESTRUCTIVE TESTING FOR BRAZE VOIDS IN THIN PANELS BY USE OF SPECIAL COATINGS
J. C. Gibson (AiRes. Mfg. Co.)
Jul. 1972
LANGLEY-10486
Application of commercial coating to exterior of sandwich

panel structures for determining presence of voids in brazed plates is discussed. Procedure for applying coating material and method of conducting nondestructive tests are explained. Illustrations are included to show appearance of voids.

**B72-10394
MANUFACTURING CONTAMINATION PREVENTION HANDBOOK**

R. T. Mackey, Sr. (N. Am. Rockwell Corp.)

Jul. 1972

M-FS-19113

Manufacturing management discipline handbook concerning contamination prevention may present principles and guidelines which can be adopted for industrial and commercial manufacturer usage. Contamination prevention program is categorized into three basic aspects: initial prevention; control of amount of unpreventable contamination; and detection and elimination of remaining contamination.

**B72-10427
ACOUSTIC EMISSION USED AS WELD QUALITY MONITOR**

W. O. Jolly

Dec. 1972

AEC-10018

Acoustic emission technique is described for use as quality control tool in nondestructive inspection of welds. Stress mounts around weld defect until it exceeds yield strength of material. Pressure wave relieving the stress is emitted and followed by oscillations caused by multiple reflections. Acoustic emissions are then detected by sensor similar to ultrasonic sensor.

**B72-10428
FABRICATION TECHNIQUES FOR ORGANIC ELECTROLYTE BATTERY**

G. D. McDonald

Dec. 1972 See also SC-CR-69-3290

AEC-10019

Experiments in fabrication and testing of silver chloride electrodes for use in organic electrolyte batteries are discussed. Electrodes were fabricated by pelletizing, sintering, hot press binding, and paste binding silver chloride on expanded metal grids of nickel or silver. Each technique was investigated by statistically designed factorial experiment.

**B72-10432
TWISTABLE MOLD FOR HELICOPTER BLADES**

E. S. Carter (United Aircraft Corp.) and E. F. Kiely (United Aircraft Corp.)

Dec. 1972

ARC-10682

Design is described of mold for fabrication of blades composed of sets of aerodynamic shells having same airfoil section characteristics but different distributions. Mold consists of opposing stacks of thin templates held together by long bolts. When bolts are loosened, templates can be set at different positions with respect to each other and then locked in place.

**B72-10445
NONFLAMMABLE AND ABRASION RESISTANT COATING PROCESS FOR GLASS FIBERS**

J. J. Dillon

Jul. 1972

MSC-14024

Surface treating glass fibers with polytetrafluoroethylene improves their resistance to heat and flammability. Organosilicon lubricant padding improves fabric flexibility.

**B72-10457
LATCH MECHANISM**

G. W. Ulrich (McDonnell-Douglas Corp.)

Aug. 1972

M-FS-21606

Ratchet device transfers loads imposed on latch to support structure before latch springs resist loads, positively locks two pivoted structures on contact, and carries loads in all directions.

**B72-10513
A NEW LOW-COST METHOD FOR PRODUCING COLLIMATING MIRRORS**

Innovator not given (Lewis Res. Center) Aug. 1972

LEWIS-11553

New method for finishing and plating machined surfaces for collimating mirrors holds surface tolerances within accepted limits. Technique reduces cost to less than one-tenth that of conventional methods.

**B72-10534
SPUTTER ETCHING OF HEMISPHERICAL BEARINGS**

R. J. Schiesser (MIT)

Sep. 1972

HQ-10712

Technique was developed for fabricating three dimensional pumping grooves on gas bearings by sputter etching. Method eliminates problems such as groove nonuniformity, profile, and finish, which are associated with normal grooving methods.

**B72-10562
BUILT-IN BLEEDER SYSTEM IN LAMINATED PLASTIC STRUCTURES**

A. G. Aguilar (N. Am. Rockwell Corp.) and G. J. Cizek (N. Am. Rockwell Corp.)

Dec. 1972

MSC-17713

Method is described for interplying resin-absorbing, glass bleeder cloth with the layup for fabricating laminated nonflammable plastic structures with wrinkle-free surfaces.

**B72-10593
FABRICATION OF COOLED, GRAPHITE-LINED STRUCTURES**

R. A. Duscha and V. R. Stubbs (Aerojet Liquid Rocket Co.)

Sep. 1972 See also NASA-CR-120853

LEWIS-11741

Improved method of fabricating cooled graphite-lined thrust chamber has been developed. Layer of nickel is electrodeposited onto outer surface of machined and contoured graphite liner. Coolant passages are machined into nickel layer, filled with wax, outer shell electroformed over this, and wax removed. Tests in flox/methane rocket engine were completely successful.

**B72-10595
MACHINE FINISHES BALLS TO HIGH DEGREE OF ROUNDNESS**

W. Angele and J. P. Hill, Jr.

Sep. 1972

M-FS-21448

Machine was developed to finish ball to roundness within 12.5 nm (half a microinch) from any types of hard material. Grinding and polishing to this tolerance is accomplished by lapping elements on four to six motor-driven spindles. Spindles are adjustably spring-loaded to ensure constant contact pressure on ball and are driven by variable speed electric motors.

**B72-10616
POLISHING IS MADE CHEAPER BY DISPOSABLE DIAMOND-IMPREGNATED ABRASIVE CLOTH**

F. J. Harper (Brown and Root/Northrop)

Dec. 1972

MSC-14247

Diamond impregnated abrasive cloth eliminated expensive diamond pastes and was economically disposed of to avoid contamination. Cloth was spunbonded nylon, but any napless fabric could be used. Cloth was sprayed with diamond abrasive gel.

**B72-10635
DESIGN CRITERIA MONOGRAPH ON TURBOPUMP INDUCERS**

Innovator not given (Lewis Res. Center) Dec. 1972 See also NASA-SP-8052

LEWIS-11824

State of the art and design criteria for liquid rocket engine

08 FABRICATION TECHNOLOGY

turbopump inducers are summarized for optimal fabrication. Design criteria optimize hydrodynamic parameters to obtain highest suction specific speed without violating structural and mechanical constraints.

B72-10638

PHOTOEMISSIVE COATING

R. A. Gange (RCA)

Dec. 1972

M-FS-22003

Polystyrene coating is applied to holographic storage tube substrate via glow discharge polymerization in an inert environment. After deposition of styrene coating, antimony and then cesium are added to produce photoemissive layer. Technique is utilized in preparing perfectly organized polymeric films useful as single-crystal membranes.

B72-10644

AN APPROACH TO REAL-TIME PROCESS CONTROL OF SEMICONDUCTOR WIRE-BONDING

Innovator not given (Vanzetti Infrared and Computer Systems) Oct. 1972

M-FS-21558

Thermal probe using infrared-transparent optical fiber attached to tip of collet with resin to prevent movement during bonding is used to accurately measure temperature during wire bonding on semiconductors for use in large scale integrated circuits.

B72-10649

A SIMPLE, EFFICIENT RESISTANCE SOLDERING APPARATUS

C. M. Vermillion

Dec. 1972

GSFC-10913

Multiple resistance soldering device for attaching electric leads to multiple terminal block connectors uses power source with one terminal connected to working probe, and other terminal attached to connector carrying common pins for lead insertion. Mating of male and female connectors solders each lead to individual cup pin.

B72-10683

THE WELD-BRAZING METAL JOINING PROCESS

T. T. Bales, W. E. Arnold, Jr., and A. B. Lawson

Dec. 1972

LANGLEY-11072

Superior mechanical properties were obtained in metal joints weld-brazed between faying surfaces. Weld-braze applications and advantages are listed.

B72-10734

REDUCTION OF POROSITY IN ALUMINUM WELDMENTS

W. S. Lee

Dec. 1972

MSC-14198

Method is described for elimination of porosity of aluminum weldments by replacing polyvinyl chloride tubing (used to connect welder to gas source, and permeable to moisture at high humidity) with copper tubing. In addition liquid argon gas is used at weld stations.

B72-10744

ELECTRO-CHEMICAL GRINDING

P. L. Feagans (AiRes. Manuf. Co.)

Dec. 1972

LANGLEY-10801

Electro-chemical grinding technique has rotation speed control, constant feed rates, and contour control. Hypersonic engine parts of nickel alloys can be almost 100% machined, keeping tool pressure at virtual zero. Technique eliminates galling and permits constant surface finish and burr-free interrupted cutting.

B72-10745

IMPROVED PHOTOETCHING FABRICATION METHOD

C. L. Kistler (Pratt and Whitney Aircraft)

Dec. 1972

LEWIS-11268

Photoetching method producing well-defined lines with minimum undercutting was developed for etching coolant passages in nickel sheet. Phosphate coating is applied over conventional silver plate maskant and phosphoric acid solution is used to remove silver maskant. Phosphoric acid prevents etching of silver edges and mask has sharply-defined lines.

B72-10754

JOINING POROUS COMPONENTS TO SOLID METAL STRUCTURES

A. Fortini and G. Tulisiak

Dec. 1972 See also B68-10331; NASA-CR-72994

LEWIS-11259

Process for joining porous metal material to solid metal structure without cracking or blockage of porous component is described. Procedures of electron beam welding and electroforming are discussed. Illustration of microstructure resulting from process is included.

B73-10003

PRODUCTION OF SMALL DIAMETER HIGH-TEMPERATURE-STRENGTH REFRACTORY METAL WIRES

D. W. Petrasek, R. A. Signorelli, and G. W. King (Westinghouse Elec. Corp.)

Mar. 1973 See also NASA-CR-120925; NASA-TN-D-6881

LEWIS-11802

Special thermomechanical techniques (schedules) have been developed to produce small diameter wire from three refractory metal alloys: columbian base alloy, tantalum base alloy, and tungsten base alloy. High strengths of these wires indicate their potential for contributing increased strength to metallic composites.

B73-10005

IMPROVED DIFFUSION WELDING AND ROLL WELDING OF TITANIUM ALLOYS

K. H. Holko

Mar. 1973 See also B71-10455; NASA-TN-D-6409; NASA-TN-D-6958

LEWIS-11852

Auto-vacuum cleaning technique was applied to titanium parts prior to welding. This provides oxide-free welding surfaces. Diffusion welding can be accomplished in as little as five minutes of hot pressing. Roll welding can be accomplished with only 10% deformation.

B73-10013

REFRACTORY INSERTS USED TO FORM COOLING PASSAGES IN CAST SUPERALLOY TURBINE VANES

A. Terpay

Mar. 1973

LEWIS-11169

Economical technique has been developed for manufacturing air-cooled turbine blades and vanes for gas turbine engines. Process uses tungsten inserts to form coolant passages. After casting, inserts are reduced to tungsten oxide during sublimation with oxygen at elevated temperature. Tungsten oxide is leached out of coolant passages with a molten salt solution.

B73-10032

METHOD FOR CASTING POLYETHYLENE PIPE

R. M. Elam, Jr.

Feb. 1973

ARC-10706

Short lengths of 7-cm ID polyethylene pipe are cast in a mold which has a core made of room-temperature-vulcanizable (RTV) silicone. Core expands during casting and shrinks on cooling to allow for contraction of the polyethylene.

B73-10038

LARGE BORON-EPOXY FILAMENT-WOUND PRESSURE VESSELS

W. M. Jensen, R. L. Bailey, and A. C. Knoell

Feb. 1973

NPO-11900

Advanced composite material used to fabricate pressure vessel is prepreg (partially cured) consisting of continuous, parallel

boron filaments in epoxy resin matrix arranged to form tape. To fabricate chamber, tape is wound on form which must be removable after composite has been cured. Configuration of boron-epoxy composite pressure vessel was determined by computer program.

B73-10040
DENSIFICATION OF POWDER METALLURGY BILLETS BY A ROLL CONSOLIDATION TECHNIQUE

W. H. Sellman (Fansteel, Inc.) and W. R. Weinberger (Fansteel, Inc.)

Mar. 1973 See also NASA-CR-120796

LEWIS-11395

Container design is used to convert partially densified powder metallurgy compacts into fully densified slabs in one processing step. Technique improves product yield, lowers costs and yields great flexibility in process scale-up. Technique is applicable to all types of fabricable metallic materials that are produced from powder metallurgy process.

B73-10072
DIFFUSION WELDING TOOL

T. B. Milam (Pratt & Whitney Aircraft Corp.)

Feb. 1973

LEWIS-11807

Tool allows flat plate diffusion welding to be done in standard brazing furnace. Weld is achieved using high water pressure applied by hand-operated positive-displacement pump. Good welds have been obtained between nickel and nickel-base alloy plates at temperature of 1200 K and water pressure of 13.8 million N/sq m.

B73-10082
FILAMENT WINDING TECHNIQUE PRODUCES STRONG LIGHTWEIGHT OXYGEN TANKS

J. F. Shuessler (McDonnell Douglas Corp.) and R. J. Dannenmueler (McDonnell Douglas Corp.)

May 1973

M-FS-22470

Fiberglass is wound in three winding and cure sequences with first two followed by grit blasting of surface before final step. Result is uniformly stressed metal liner assembly with excellent structural characteristics.

B73-10258
IMPROVED FIBERGLASS-TO-METAL JOINT PRODUCES LIGHTER STRONGER FIBERGLASS STRUT

J. R. Barber, H. E. Johnson (Lockheed Missiles & Space Co.), and K. T. Eugene (Lockheed Missiles & Space Co.)

Aug. 1973 See also NASA-CR-72538

LEWIS-11661

Axial tension and compression are transmitted between end fittings and fiberglass tube without depending on glass-to-metal bonding, conventional fasteners or combination of these things. Joint design significantly reduces both structural weight of strut and its cross-sectional area.

B73-10265
BORON-EPOXY TUBULAR STRUCTURE MEMBERS

W. B. J. Shakespeare (TRW Systems Group), P. T. Nelson (TRW Systems Group), and E. C. Lindkvist (TRW Systems Group)

Jun. 1973

ARC-10737

Composite materials fabricate thin-walled tubular members which have same load-carrying capabilities as aluminum, titanium, or other metals, but are lighter. Interface between stepped end fitting and tube lends itself to attachments by primary as well as secondary bonding. Interlaminar shear and hoop stress buildup in attachment at end fitting is avoided.

B73-10284
EUTECTIC BONDING OF SAPPHIRE TO SAPPHIRE

J. J. Deluca

Aug. 1973

GSFC-11577

Eutectic mixture of aluminum oxide and zirconium oxide provides new bonding technique for sapphires and rubies.

Technique effectively reduces possibility of contamination. Bonding material is aluminum oxide and zirconium oxide mixture that matches coefficient of thermal expansion of sapphire.

B73-10287

SHUTTLE ORBITER STORAGE LOCKER SYSTEM: A STUDY

D. R. Butler (Raymond Loewy/William Snaith, Inc.), D. T. Schowalter (Raymond Loewy/William Snaith, Inc.), and D. C. Weil (Raymond Loewy/William Snaith, Inc.)

Sep. 1973 See also NASA-CR-128864

JSC-14448

Study has been made to assure maximum utility of storage space and crew member facilities in planned space shuttle orbiter. Techniques discussed in this study should be of interest to designers of storage facilities in which space is at premium and vibration is severe. Manufacturers of boats, campers, house trailers, and aircraft could benefit from it.

B73-10298
EMBOSSED METAL DIAPHRAGM HAS TWO-WAY STRETCH

W. F. MacGlashan, Jr.

Jul. 1973

NPO-11635

Diaphragm with embossed pattern has greater structural rigidity than one with smooth surfaces, but under severe stress, tensile loads will flatten embossing. This provides necessary additional panel stretch needed to prevent rupture of diaphragm material. Hexagonal embossing-configuration allows panel stretch in any direction or in all directions simultaneously.

B73-10311
DESIGN GUIDE FOR GLASS FIBER REINFORCED METAL PRESSURE VESSEL

R. E. Landes (Structural Composites Ind.)

Dec. 1973 See also NASA-CR-120917; NASA-CR-120918

LEWIS-12042

Design Guide has been prepared for pressure vessel engineers concerned with specific glass fiber reinforced metal tank design or general tank tradeoff study. Design philosophy, general equations, and curves are provided for safe-life design of tanks operating under anticipated space shuttle service conditions.

B73-10340
RADIAL HONEYCOMB CORE

R. B. Cantley (Lockheed-Georgia Co.), C. C. Nelson, Jr. (Lockheed-Georgia Co.), R. W. Patterson (Lockheed-Georgia Co.), and K. H. Potter (Lockheed-Georgia Co.)

Aug. 1973

ARC-10727

Core alleviates many limitations of conventional nacelle construction methods. Radical core, made of metals or nonmetals, is fabricated either by joining nodes and then expanding, or by performing each layer and then joining nodes. Core may also be produced from ribbons or strips with joined nodes or ribbons oriented in longitudinal planes.

B73-10358
NEW CONCEPT IN BRAZING METALLIC HONEYCOMB PANELS

P. D. Carter (Boeing Co.), R. E. Layton (Boeing Co.), and F. W. Stratton (Boeing Co.)

Oct. 1973

LANGLEY-10957

Aluminum oxide coating provides surface which will not be wetted by brazing alloy and which stops metallic diffusion welding of tooling materials to part being produced. This method eliminates loss of tooling materials and parts from braze wetting and allows fall-apart disassembly of tooling after brazing.

B73-10375
MANUFACTURE OF LARGE, LIGHTWEIGHT PARABOLIC ANTENNAS

S. W. Hooper (TRW, Inc.)

Sep. 1973

ARC-10741

Antenna was produced in segments. Parabole sections were built up as aluminum foil sandwich with core bonded by film

08 FABRICATION TECHNOLOGY

adhesive; whole structure was oven-cured after assembly. Structure was assembled with special tool for splice-bonding segments into complete dish, and inflatable bladder to apply pressure at joints during cure.

B73-10391

FLAT-BAND ASSEMBLY FOR TOROIDAL TRANSFORMER CORES

W. T. McLyman

Sep. 1973

NPO-11966

Toroidal transformer cores are often banded together by means of strap. Spot welds secure strap. Proper tension is obtained by use of special fixture in conjunction with winding of wire which is placed temporarily on core; winding is excited by dc current to hold core halves together magnetically during alignment.

B73-10438

PROCEDURE FOR DISPERSING FIBER BUNDLES

D. Padilla (Martin Marietta Corp.)

Feb. 1974

LANGLEY-11224

Fiber bundles are dispersed and fibers are cleaned within enclosed container; therefore, safety clothing, masks, and eye protection are not required. Procedure also could be used wherever materials, such as fiberglass or insulation, require dispersion, fluffing, or cleaning. Process could be automated into continuous operation for handling large quantities of fiber.

B73-10439

ADHESIVE COATING ELIMINATED IN NEW HONEYCOMB-CORE FABRICATION PROCESS

W. L. Batty (Martin Marietta Corp.), R. H. Hayes (Martin Marietta Corp.), and F. S. Magee (Martin Marietta Corp.)

Jan. 1974

LANGLEY-11134

Technique eliminates use of silicone-based adhesive material as bonding medium. Adhesive requires precise time-temperature cure. Prepreg resin is used as bonding medium, and each layer is laminated together to form honeycomb billet. Process can be used in any application where nonmetallic honeycomb core is being fabricated.

B73-10508

GRAIN REFINEMENT CONTROL IN GAS-SHIELDED ARC WELDING OF ALUMINUM TUBING

W. F. Iceland (Rockwell Intern. Corp.) and E. L. Whiffen (Rockwell Intern. Corp.)

Mar. 1974

JSC-19095

When sections are being welded, operator varies pulse rate of power supply and simultaneously monitors signal on oscilloscope until rate is found which produces maximum arc gas voltage. Remainder of welding is performed with power supply set at this pulse rate, producing desired maximum weld puddle agitation and fine uniform weld of grain structure.

B73-10528

X-RAY OPAQUE ADDITIVE FOR INSPECTION OF WELD JOINTS

R. L. Brown and J. L. Cook (McDonnell Douglas Corp.)

Mar. 1974

M-FS-22896

Thin coating of copper applied to each faying surface of aluminum-alloy improve X ray detection of welding defects. Copper may be applied by spraying, coating, or deposition. Thickness of faying surfaces must be uniform in range. Coating must be free from spalling and blistering and must contain no porosity.

B74-10018

HIGH STRENGTH, WIRE-REINFORCED ELECTROFORMED STRUCTURES

J. M. Kazaroff, R. A. Duscha, and L. C. McCandless (Gen. Technologies Corp.)

Jun. 1974 See also NASA-CR-134480

LEWIS-12087

Using half-round reinforcing wires, electrodeposited matrix metal readily fills spaces between wires in intimate contact with wires and without voids. Procedure combines advantages of electroforming with high-strength of commonly available wire to produce non-welded shell structures for high pressure uses.

B74-10114

LIGHT-WEIGHT SPHERICAL SUBMERGENCE VESSEL

I. Baker (Hughes Aircraft Co.)

Aug. 1974

ARC-10838

Design vessel with very low thickness-to-radius ratio to obtain low weight, and fabricate it with aid of precision tracer-lathe to limit and control imperfections in spherical shape. Vessel is thin-walled, spherical, monocoque shell constructed from hemispheres joined with sealed and bolted meridional flange.

B74-10125

BINARY ALLOYS FOR REFRACTORY-METAL BRAZING

J. F. Morris

Nov. 1974 See also NASA-TM-X-68190

LEWIS-12184

Data on binary-metal eutectics and melting-point minimums have been assembled for use in selecting brazing filler compositions for refractory metals. Data are presented in four tables for ready reference. Brief discussion of problems and potentials of metallides is included in appendix.

B74-10126

FABRICATION OF THICK STRUCTURES BY SPUTTERING

J. M. Kazaroff, E. D. McClanahan (Battelle Pacific Northwest Labs.), R. Busch (Battelle Pacific Northwest Labs.), and R. W. Moss (Battelle Pacific Northwest Labs.)

Dec. 1974 See also NASA-CR-134542; NASA-SP-5111

LEWIS-12331

Deposit, 5500-gram of Cu-0.15 wt % Zr alloy, sputtered onto copper cylinder to average thickness of 12.29 mm. Structure was achieved with high-rate sputter deposition for about 100 hours total sputtering time. Material had twice the strength of unsputtered material at temperatures to 723 K and equivalent strength at nearly 873 K.

B74-10141

PRESSURE APPLICATION TECHNIQUE FOR HIGH-TEMPERATURE COMPOSITE FABRICATION

R. M. Baucom and J. F. Powers

Sep. 1974

LANGLEY-11601

Technique utilizes characteristic of room-temperature vulcanizing rubber (RTV) which expands readily when heated. RTV expansion can exert uniform pressure on filament-reinforced polymer materials during curing. Technology accommodates high-temperature pressure application for P13-N polyimide composite consolidation during cure.

B74-10185

PROCESS FOR FABRICATION OF STABILIZED ALUMINUM PHOSPHATE FIBERS

T. J. Ormiston (GE) and R. A. Tanzilli (GE)

Nov. 1974 See also NASA-CR-132331

LANGLEY-11526

Ceramic possesses ideal property combination of high refractoriness and low thermal expansion. Fiber exceeds performance of fused silica fibers at high temperatures. It shrinks less, does not devitrify into unstable cristobalite structure, and is potentially less sensitive to impurities. Might be used for high-temperature insulation, fire protection, composites, and refractories.

B74-10214

SIDE WIRE FEED FOR WELDING APPARATUS

J. C. Arnett

Nov. 1974

NPO-13148

Coaxial electrode arrangement has solid central electrode, insulated outer electrode, and transverse channel for feeding wire through tip of electrode assembly. Polymeric insulation is thrust

aside by pressure, which is provided by separately operated mechanism acting through central electrode.

B74-10263**LOW-TEMPERATURE ELECTROSTATIC SILICON-TO-SILICON SEALS USING SPUTTERED BOROSILICATE GLASS**

C. A. Hardesty, A. D. Brooks (Res. Triangle Inst.), and R. P. Donovan (Res. Triangle Inst.)

Jan. 1975

LANGLEY-11589

Silicon members are hermetically sealed to each other. Process produces no measurable deformation of silicon surfaces and is compatible with package designs of tight tolerance. Seals have been made with glass coatings in 10-mm to 20-mm thickness range without any prior annealing of coated silicon substrates.

B74-10270**PLASTIC COVERING ON AIRFOIL STRUCTURE PROVIDES SMOOTH UNINTERRUPTED SURFACE**

J. A. Kinzler, L. G. Fehrenkamp, J. T. Heffernam, and W. S. Lee

Jan. 1975

MSC-12631

Primed surface is covered with adhesive. Sheet of plastic film is stretched over adhesive and mechanical holder is used to apply tension to ends of sheet to make it conform to surface of airfoil. After adhesive cures, plastic can be trimmed with sharp cutting tool.

B74-10272**EXPLOSIVE WELDING TECHNIQUE FOR JOINING ALUMINUM AND STEEL TUBES**

M. E. Wakefield (Martin Marietta Corp.)

Jan. 1975

MSC-14721

Silver sheet is wrapped around aluminum portion of joint. Mylar powder box is wrapped over silver sheet. Explosion welds silver to aluminum. Stainless-steel tube is placed over silver-aluminum interface. Mylar powder box, covered with Mylar tape, is wrapped around steel member. Explosion welds steel to silver-aluminum interface.

B75-10006**INHIBITING KIRKENDALL VOID GROWTH IN WELDED BIMETALLIC STRUCTURES**

F. G. Arcella (Westinghouse Astronuc. Lab.), G. A. Lessman (Westinghouse Astronuc. Lab.), and R. A. Lindberg

Mar. 1975 See also NASA-CR-134490; NASA-CR-134526

LEWIS-11573

Technique employs pre-aged, void-free junction composed of parent materials. Basic process for Kirkendall void inhibition can be applied to thermionic power systems, high temperature seals, high temperature junctions between any two metals of differing melting points where Kirkendall void formation would be detrimental.

B75-10089**SPUTTERED GOLD MASK FOR DEEP CHEMICAL ETCHING OF SILICON**

B. P. Pisciotta, C. Gross, and R. S. Olive

Jun. 1975

LANGLEY-11661

Sputtered mask resists chemical attack from acid and has adherence to withstand prolonged submergence in etch solution without lifting from silicon surface. Even under prolonged etch conditions with significant undercutting, gold mask maintained excellent adhesion to silicon surface and imperviousness to acid.

B75-10145**MOUNTING TECHNIQUE FOR PRESSURE TRANSDUCERS MINIMIZES MEASUREMENT INTERFERENCES**

R. N. Lanham (Northrop Corp.), C. E. Taylor (Northrop Corp.), C. E. Balmer (Northrop Corp.), and C. Hwang (Northrop Corp.)

Jul. 1975

ARC-10933

Miniaturized transducers are fabricated from commercially available four-arm semiconductor gages; transducers are

connected as bridge circuit and mounted on internal face of small diaphragm. Jacket made of conductive plastic may be needed to avoid buildup or static charges.

B75-10164**FABRICATION AND REPAIR OF GRAPHITE/EPOXY LAMINATES**

J. R. Lager (Martin Marietta Corp.) and B. Burke (Martin Marietta Corp.)

Aug. 1975

M-FS-23228; M-FS-23229

New forming and patching methods have been developed for high-quality graphite/epoxy laminates. Laminates range in thickness from 0.012 to 0.018 in. (0.31 to 0.46 mm).

B75-10179**THREE-DIMENSIONAL MODELS AID VISUALIZATION OF ENGINEERING DRAWINGS**

A. R. McDougal and C. E. Aardahl

Aug. 1975

NPO-13394

Inexpensive cut-and-paste method allows construction of complex three-dimensional models in less than an hour. Models are constructed from film or paper copies made on office copier.

B75-10212**IMPROVED CHEMICAL VAPOR-DEPOSITION REACTOR**

S. S. Chern and J. Maserjian

Sep. 1975

NPO-13650

Formation of large particles on substrate is eliminated by actively exhausting reacted gases. Effluent gas backflow is prevented by pumping in curtain of nitrogen above fresh reactive gases from several directions.

B75-10216**MACHINE FOR FABRICATION OF BATTERY-ELECTRODE PLAQUES**

W. C. Harsch (Eagle-Picher Industries, Inc.)

Oct. 1975

GSFC-12004

Functional parts of device are built to close tolerances of 0.001 inch (0.025 mm) and can be adjusted within range of plus or minus 0.005 inch (plus or minus 0.0127 mm).

B75-10238**DIP MOLDING TO FORM INTRICATELY-SHAPED MEDICAL ELASTOMER DEVICES**

H. F. Broyles

Oct. 1975

NPO-13535

Preshaped mandrel mounted on rotating mechanism is partially immersed in tank filled with liquid elastomer. While mandrel rotates, elastomer film forms on mandrel surface due to surface tension and capillary behavior of liquid. Devices with well-defined flanges can be made using process.

B75-10257**PROCESS FOR PREPARING POLYIMIDE ADHESIVES**

D. J. Progar, V. L. Bell, and T. L. St. Clair (Virginia Polytechnic Institute and State Univ.)

Oct. 1975

LANGLEY-11397

High bonding strengths are obtained for metals and fiber-reinforced organic resin composites with no significant loss in thermo-oxidative stability of the adhesive resin.

B75-10261**DIAMINE CURING AGENTS FOR POLYURETHANES**

V. L. Bell and T. L. St. Clair (Virginia Polytechnic Institute and State Univ.)

Oct. 1975

LANGLEY-11829

Three aromatic diamines have properties that make them promising candidates as curing agents for converting isocyanates

08 FABRICATION TECHNOLOGY

to polyurethanes with higher adhesive strengths, higher softening temperatures, better toughness, and improved abrasion resistance.

B75-10267

INDUSTRIAL LASER WELDING: AN EVALUATION

R. Hella (Avco Everett Res. Lab.), E. Locke (Avco Everett Res. Lab.), and S. Ream (Avco Everett Res. Lab.)

Oct. 1975

M-FS-23237

Report describes 10-kW laser welding system, designed to weld large structures made from 1/4-inch and 1/2-inch aluminum (2219) and D6AC steel.

B75-10299

FORMATION OF INTERNALLY-CONFINED SEMICONDUCTOR LASERS

V. M. Cannuli (RCA)

Dec. 1975

LANGLEY-11770

In technique for fabrication of strip lasers, current constriction is accomplished by diffusing blocking regions into n-type substrate prior to growth. Current flow is controlled by blocking layers, which results in reduction of threshold current and better heat dissipation.

B75-10301

LOW-COST HOT-AIR SOLAR COLLECTOR

E. P. Herndon and K. G. Anthony

Dec. 1975

M-FS-23272

System has only three components per cell. Cell parts are fabricated from readily available materials and, following a construction procedure which requires use of only simple handtools, can be mounted in place by one person.

B75-10309

FOAM-MACHINING TOOL WITH EDDY-CURRENT TRANSDUCER

W. P. Copper (Martin Marietta Corp.)

Dec. 1975

M-FS-23298

Three-cutter machining system for foam-covered tanks incorporates eddy-current sensor. Sensor feeds signal to numerical controller which programs rotational and vertical axes of sensor travel, enabling cutterhead to profile around tank protrusions.

B75-10319

BIAXIAL COMPRESSION TEST TECHNIQUE

E. T. Hansard (Gen. Dyn. Corp.)

Dec. 1975

MSC-14883

Fixture and technique have been developed for predicting behavior of stiffened skin panels under biaxial compressive loading. Tester can load test panel independently in longitudinal and transverse directions. Data can also be obtained in combined mode.

09 COMPUTER PROGRAMS

B70-10063

SYSTEM AVAILABILITY MANAGEMENT TECHNIQUE FOR RELIABILITY AND MAINTAINABILITY ANALYSIS

DAVENPORT, G. K. /BENDIX CORP./ DATE- JUL. 1970
KSC-10315

Method for total system availability analysis is based on numerical prediction of the reliability, maintainability, and availability of each function system. It incorporates these functional-system estimates into an overall mathematical model.

B70-10067

AUTOMATIC DATA GENERATION SCHEME FOR FINITE-ELEMENT METHOD /FEDGE/ - COMPUTER

PROGRAM

AKYU2, F. DATE- SEP. 1970

NPO-11069

Algorithm provides for automatic input data preparation for the analysis of continuous domains in the fields of structural analysis, heat transfer, and fluid mechanics. The computer program utilizes the natural coordinate systems concept and the finite element method for data generation.

B70-10078

POLYNOMIAL-SMOOTHING AND DERIVATIVE-ESTIMATING FORMULAS FOR FUNCTIONS OF ONE OR TWO INDEPENDENT VARIABLES

SENTNER, A. J. DATE- AUG. 1970 REAN- SEE ALSO
NASA-CR-98657
NPO-11256

Application of polynomial-smoothing formulas and related derivative-estimating formulas simplifies certain linear least-squares problems. These problems can then be solved by a computer method.

B70-10091

WIRING HARNESES DOCUMENTED BY PUNCHED-CARD TECHNIQUE

HICKS, W. W. KLOEZEMAN, W. G. DATE- JUN. 1970
REAN- SEE ALSO **NASA-CR-97150**
NPO-11249

Cards representing a connector are punched, sorted, and then used to printout wiring documentation for that connector. When wiring changes are made, new cards are punched and the wiring documentation is reprinted to reflect the latest configuration.

B70-10132

COMPUTER PROGRAMS FOR DETERMINATION OF TRANSONIC FLOW PARAMETERS IN A CONVERGENT-DIVERGENT NOZZLE

JAFFE, B. (RAO (G. V. R.) AND ASSOCIATES) RAO, G. V. R. DATE- NOV. 1970
NPO-10895

Programs based on equations that include functions for boundary values along nozzle axis yield different types of flow field configurations. Program's documentation details method of calculating subsonic flow field and sonic line, and describes modified method of characteristics for calculating supersonic flow downstream of sonic line.

B70-10133

A PROGRAM FOR COMPUTING SHOCK-TUBE GAS DYNAMIC PROPERTIES

HORTON, T. E. MENARD, W. A. DATE- MAY 1970
NPO-11068

Computer program calculates thermodynamic properties from basic spectroscopic data. Program capacity is a mixture of 100 different species composed of ten different elements. The output is a complete thermodynamic and chemical description of the gas.

B70-10158

CALCULATION OF THE INERTIA TENSOR AND CENTER OF GRAVITY OF COMPLEX BODIES

HOWARD, L. A. DATE- APR. 1970
NPO-10827

Inertia tensor is calculated for each component part of a body about its own principal axes, and then with respect to the body's reference axes /rotation/. All parts are then combined to calculate the center of gravity and inertia tensor of the body.

B70-10184

PERT **C**

SPON- INNOVATOR NOT GIVEN /MARSHALL SPACE FLIGHT CENTER/ DATE- SEP. 1970

M-FS-20164

Computer program, PERT, provides method and technique for planning, evaluating, and graphically portraying in orderly related sequence the activities necessary to achieve a stated objective.

09 COMPUTER PROGRAMS

B70-10230
IMPROVED ANTENNA PATTERN RECORDER PROVIDES
VISUAL DISPLAY OF RF POWER
LIPIN, R., JR. /SPERRY RAND CORP./ DATE- AUG.
1970
M-FS-20447
Antenna pattern recording system has a
discretionary signal level monitor which senses a
specified minimum level occurring between sampling
intervals. This enables RF power and percent
coverage to be calculated more accurately.

B70-10257
AUTOMATED VALIDATION OF A COMPUTER OPERATING
SYSTEM
DERVAGE, M. M. /BOEING CO./ MILBERG, B. A.
DATE- DEC. 1970
M-FS-14510
Programs apply selected input/output loads to
complex computer operating system and measure
performance of that system under such loads.
Technique lends itself to checkout of computer
software designed to monitor automated complex
industrial systems.

B70-10265
SIMULTANEOUS RANDOM AND SEQUENTIAL COMPUTER
PROCESSING USING AN EXPANDED SEQUENTIAL
INDEX
WARREN, C. G. /CHRYSLER CORP./ DATE- JUL. 1970
M-FS-20266
Redesigned second-generation, tape-oriented
computer system updates a data record, increases
the capability to perform update runs, and
produces a sequential report for every update run.

B70-10308
VISUAL DEVICE TO ASSIST COMPUTER PROGRAM
DEBUGGING
GARCIA, G. /N. AM. ROCKWELL CORP./ DATE- JUN.
1970
MSC-15833
Interrupt status indicators allow computer
programs to be debugged during checkout and
provide a quick-look analysis for updating.
Computer coupled indicator lamps and lamp driver
circuitry register program malfunctions in
priority interrupt controlled programs.

B70-10317
COMPUTER PROGRAM FOR ANALYSIS OF FLOW
ACROSS A GAS TURBINE SEAL
SMITH, P. J. ZUK, J. DATE- JUL. 1970
LEWIS-10975
Computer program analyzes the flow /leakage/
across a sealing dam for the case of steady,
laminar, subsonic, isothermal, compressible flow.
The analysis considers both parallel sealing-dam
surfaces and surfaces with small tilt angles.

B70-10374
LOW-POWER INTEGRATED-CIRCUIT DRIVER FOR
FERRITE-MEMORY WORD LINES
KATZ, S. /RCA/ DATE- OCT. 1970
ERC-10212
Composite circuit uses both n-p-n bipolar and
p-channel MOS transistors /BIMOS/. The BIMOS
driver provides 1/ ease of integrated circuit
construction, 2/ low standby power consumption, 3/
bidirectional current pulses, and 4/ current-pulse
amplitudes and rise times independent of active
device parameters.

B70-10446
ERROR COMPENSATION FOR HYBRID-COMPUTER
SOLUTION OF LINEAR DIFFERENTIAL EQUATIONS
KEMP, N. H. /WOLF RES. AND DEVELOP. CORP./ DATE-
NOV. 1970
ERC-10262
Z-transform technique compensates for digital
transport delay and digital-to-analog hold.
Method determines best values for compensation
constants in multi-step and Taylor series
projections. Technique also provides
hybrid-calculation error compared to continuous
exact solution, plus system stability properties.

B70-10452
SELF TESTING AND REPAIRING COMPUTER - A
CONCEPT

AVIZIENIS, A. A. DATE- SEP. 1970
NPO-10567
STAR computer has five redundant modular function
units, fixed store, arithmetic, memory, input, and
output. Each unit is connected to a diagnostic
control unit, each is coded for error detection
and error correction. Separation into function
units permits assembly of many different systems
from the set of units.

B70-10484
CONCEPT FOR HIGH SPEED COMPUTER PRINTER
STEPHENS, J. W. /BOEING CO./ DATE- OCT. 1970
KSC-10373
Printer uses Kerr cell as light shutter for
controlling the print on photosensitive paper.
Applied to output data transfer, the information
transfer rate of graphic computer printers could
be increased to speeds approaching the data
transfer rate of computer central processors /5000
to 10,000 lines per minute/.

B70-10496
RAPID METHOD FOR INTERCONVERSION OF BINARY
AND DECIMAL NUMBERS
LIN, R. S. DATE- DEC. 1970
ARC-10159
Decoding tree consisting of 40-bit semiconductor
read-only memories interconverts binary and
decimal numbers 50 to 100 times faster than
current methods. Decimal-to-binary conversion
algorithm is based on a divided-by-2 iterative
equation, binary-to-decimal conversion algorithm
utilizes multiplied-by-2 iterative equation.

B70-10501
COPTRAN - A METHOD OF OPTIMUM COMMUNICATION
SYSTEMS DESIGN
BRINKMAN, K. L. /HUGHES AIRCRAFT CO./ PRATT, W.
K. STOKES, L. S. WEBER, J. W. DATE- OCT. 1970
ERC-10273
Single set of mathematical expressions describes
system cost and probability of error of data
transmission in terms of four basic parameters in
the link equation. A Lagrange multiplier sets
up equations whose solutions yield the optimum
values for system design considerations and weight
and cost values.

B70-10532
DISC PACK CLEANING TABLE SAVES COMPUTER
TIME
GUY, J. T., SR. DATE- SEP. 1970
LANGLEY-10590
Disc pack holding table is support frame upon
which computer disc pack is loaded and protective
cover released. This combination permits manual
off-line cleaning of disc pack storage units at
any time without shutting down the computer, and
eliminates on-line disc drive unit to hold pack
during cleaning.

B70-10555
SATURN S-2 BASE ENVIRONMENT FOR FLIGHT
EVALUATION
GEORGATOS, F. D. /N. AM. ROCKWELL CORP./ DATE-
SEP. 1970
M-FS-16597
Computer program reduces base region flight data
to isothermal and cold wall conditions and
predicts instrument readings before and after
flight. The flight data is made appropriate for
nominal J-2 engine combustion. This program is
used for any five-engined stage with center engine
fixed.

B70-10556
INFORMATION RETRIEVAL SYSTEM
BERG, R. F. /BELLCOMM, INC./ HOLCOMB, J. E.
KELROY, E. A. LEVINE, D. A. MEE, C., III DATE-
OCT. 1970
HQ-10426
Generalized information storage and retrieval
system capable of generating and maintaining a
file, gathering statistics, sorting output, and
generating final reports for output is reviewed.
File generation and file maintenance programs
written for the system are general purpose
routines.

09 COMPUTER PROGRAMS

B70-10557
NEUTRON AGES COMPUTED FROM EXPERIMENTAL
ACTIVATION DATA
SEMLER, T. T. DATE- OCT. 1970
LEWIS-10949

Computer program reduces time manually required to compute neutron age and to provide definite plan of procedural choices. Program allows convenient comparison of several fitting and error analysis procedures. Program code provides for error estimation of various integration options.

B70-10561
GROUND COMPUTER TEST TRAP
FONDRIE, D. G. /IBM/ HIGGINS, P. H. DATE- NOV.
1970 REAN- SEE ALSO B70-10560
KSC-10574

Test trap consists of logic nest of five printed circuit boards, plus power supply within the unit. Device monitors more than one logic area simultaneously, gives visual display of detected error, operates at computer speed, maintains readily available logic description of cards used, and is compatible with existing computer circuitry.

B70-10597
DIGITAL PROGRAM ANALYZES SUPERSONIC FLOW
FIELD WITHIN BELL-SHAPED ROCKET NOZZLES
ELLIOTT, J. J. /N. AM. ROCKWELL CORP./ STROMSTA,
R. R. DATE- NOV. 1970
M-FS-14292

Digital computer program computes and analyzes supersonic flow field in axisymmetric rocket nozzle for specified gas properties, nozzle geometry, and input or starting line. Method of characteristics is used for solution of set of hyperbolic partial differential equations.

B70-10599
A METHOD OF NUMERICALLY CONTROLLED MACHINE
PART PROGRAMMING
SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- NOV.
1970
M-FS-15039

Computer program is designed for automatically programmed tools. Preprocessor computes desired tool path and postprocessor computes actual commands causing machine tool to follow specific path. It is used on a Cincinnati ATC-430 numerically controlled machine tool.

B70-10602
EXPANDED SUN-LOOK ANGLE PROGRAM
BOYD, C. C. /LOCKHEED ELECTRON. CO./ DATE- DEC.
1970
MSC-13176

Computer program provides time history of sun aspect angles as seen from spacecraft and generates binary tape containing time history of position, velocity, and body attitude angles of vehicle in local horizontal, local vertical system. Program is written in FORTRAN 5 and SLEUTH 2 for Univac 1108 computer.

B70-10603
MULTIBODY INTERPLANETARY SWINGBY TRAJECTORIES
/MIST-1/
DAVIS, D. A. /BOEING CO./ ROBERTS, G. R. DATE-
DEC. 1970
M-FS-15081

Computer program incorporates new isolation procedure to determine interplanetary trajectories which utilize a maximum of three flybys. Program also computes single planet flybys and direct transfer trajectories. The three principle systems employed in MIST-1 use as their fundamental plane the mean plane of the earth's orbit around the sun.

B70-10605
POST FLIGHT DYNAMIC ANALYSIS SIMULATION
GREGORY, B. R. /BOEING CO./ DATE- NOV. 1970
M-FS-15067

Digital six-degrees-of-freedom, open loop Saturn 5 first stage flight evaluation simulation program obtains post flight simulation of the launch vehicle using actual flight data as input. Results are compared with measured data. For preflight analysis, the program uses predicted flight data as input.

B70-10606
COMPUTERIZED TOROIDAL TRANSFORMER DESIGN
SPON- INNOVATOR NOT GIVEN /CALTECH/JPL/ DATE-
NOV. 1970
NPO-11115

Computer program designs transformers which have one primary /center tap permissible/ and up to 20 untapped secondaries, and which can handle up to 500 V across any one winding. Computer determines total secondary power, core type, primary turns, secondary turns, and wire sizes for primary and secondary windings.

B70-10613
CONDENSATION OF WET VAPORS IN TURBINES
KOTHMAN, R. E. /WESTINGHOUSE ASTRONUCL. LAB./
DATE- NOV. 1970
NPO-10773

Computer program predicts condensation point in wet vapor turbines and analyzes subsequent nucleation and growth processes to determine both moisture content and drop size and number distribution as a function of position. Program includes effects of molecular association on condensation and flow processes and handles both subsonic and supersonic flows.

B70-10614
RELIABILITY ANALYSIS MODEL
SPON- INNOVATOR NOT GIVEN /BOEING CO./ DATE- NOV.
1970 REAN- SEE ALSO B68-10252
M-FS-14513

RAM program determines probability of success for one or more given objectives in any complex system. Program includes failure mode and effects, criticality and reliability analyses, and some aspects of operations, safety, flight technology, systems design engineering, and configuration analyses.

B70-10615
ANALYSIS OF SURFACE ABLATION OF NONCHARRING
MATERIALS
MATTING, F. W. DATE- NOV. 1970 REAN- SEE ALSO
NASA-TN-D-3758
ARC-10223

Computer program solves combined problem of heat transfer and material response for the stagnation region of blunt bodies experiencing melting and vaporizing or subliming ablation. Program contains formulas for the transitional regime to bridge between the free-molecule and continuum regimes.

B70-10625
SEPARATION OF TWO BODIES IN SPACE
CHAMBERLAIN, R. G. MACK, T. H. SILSBY, W. DATE-
DEC. 1970
NPO-10663

Computer program analyzes the motion of two rigid bodies in space, separating as a result of any one, or a combination of, the following mechanisms - springs with ball ends, springs with one end guided, pyrotechnics, rockets, cold-gas jets, air pistons, and Coulomb drag.

B70-10637
GLOBAL SEARCH ALGORITHM FOR OPTIMAL CONTROL
BROCKER, D. H. KAVANAUGH, W. P. STEWART, E. C.
DATE- DEC. 1970 REAN- SEE ALSO NASA-TN-D-5642
ARC-10359

Random-search algorithm employs local and global properties to solve two-point boundary value problem in Pontryagin maximum principle for either fixed or variable end-time problems. Mixed boundary value problem is transformed to an initial value problem. Mapping between initial and terminal values utilizes hybrid computer.

B70-10642
MICROPROGRAM SCHEME FOR AUTOMATIC RECOVERY
FROM COMPUTER ERROR
BATTIN, R. A. /MIT/ COPPS, E. M. HOPKINS, A.
L., JR. MILLER, J. S. SMITH, H. B. DATE- DEC.
1970
MSC-13387

Microprogram scheme enables computer to recover from failure in one of its two central processing units during time duration of instruction in which

09 COMPUTER PROGRAMS

failure occurs. Microprogram advantages include -
 /1/ built-in interpretive capability, /2/
 selection of processing interrupts by priority,
 and /3/ economical use of bootstrap sequence.

B70-10660

MAN-MACHINE INTERACTIVE SYSTEM SIMPLIFIES
 COMPUTER-AIDED CIRCUIT DESIGN

BAVUSO, S. J. DATE- DEC. 1970

LANGLEY-10711

Langley interactive computerized circuit analysis capability /LICCA/ enables designer to draw electronic circuit diagrams on cathode ray tube screen. This information is submitted as input to user-selected circuit analysis program. LICCA accommodates binary logic circuits and circuits with discrete components, and monitors operator's instructions to detect errors.

B70-10669

COMPUTER PROGRAM FOR THE DESIGN OF AXIAL-FLOW
 TURBINES

CARTER, A. P. /NORTHERN RES. AND ENG. CORP./
 LENHERR, F. K. DATE- DEC. 1970 REAN- SEE ALSO

B69-10111

LEWIS-11029

Computer program, capable of analyzing single and multispool units, computes absolute and relative flow fields within the turbine at the first stator inlet, at each interblade row plane, and at the final rotor exit. No simplifying assumptions are made which would result in restrictive design.

B70-10698

IMPROVED CONVOLUTIONAL CODING

DOLAND, G. D. /LOCKHEED ELECTRON. CO./ DATE-
 DEC. 1970

MSC-13625

Convolutional coding, used to upgrade digital data transmission under adverse signal conditions, has been improved by a method which ensures data transitions, permitting bit synchronizer operation at lower signal levels. Method also increases decoding ability by removing ambiguous condition.

B70-10705

DIGITAL SIMULATION PROGRAM IMPROVED

BRAMBLETT, E. K. /N. AM. ROCKWELL CORP./ DATE-
 DEC. 1970

M-FS-01504

Modified Integration Digital Analog Simulation /MIDAS/ program, which provides time oriented solutions to equations from system block diagram descriptions, is given greater speed, accuracy, flexibility, and applicability. Improved program incorporates additional elements for extended solution capability not readily available from analog computers.

B70-10720

TIME DATA SEQUENTIAL PROCESSOR /TDSP/

JOSEPH, A. E. PAVLOVITCH, T. ROTH, R. Y.

STURMS, F. M. DATE- DEC. 1970

NPO-11327

Time Data Sequential Processor /TDSP/ computer program provides preflight predictions for lunar trajectories from injection to impact, and for planetary escape trajectories for up to 100 hours from launch. One of the major options TDSP performs is the determination of tracking station view periods.

B71-10002

FAST MARS COMMUNICATION GEOMETRY PROGRAM

GARNER, W. R./MARTIN MARIETTA CORP./ TULLY, J. Q.

JAN. 1971

LANGLEY-10658

Computer program calculates trajectories of orbiting spacecraft and lander vehicles simultaneously. Using data from both vehicles, program calculates communications geometry which consists of orbiting spacecraft cone/clock angle, lander cone/clock angle, range, range rate and acceleration, and fade, reflective, and system margins.

B71-10003

DIGITAL SIMULATION ERROR CURVES FOR A
 SPRING-MASS-DAMPER SYSTEM

KNOX, L. A./IBM/

FEB. 1971

M-FS-20770

Plotting digital simulation errors for a spring-mass-damper system and using these error curves to select type of integration, feedback update method, and number of samples per cycle at resonance reduces excessive number of samples per cycle and unnecessary iterations.

B71-10006

SYSTEMS OF CODING AND THEIR IMPLEMENTATION

ANDERSON, T. O.

JAN. 1971

NPO-11469

Engineering planning document surveys mechanics, utility, and potential improvements of codes which control noise-generated errors introduced into radio transmission of binary information. Chronological development of certain codes and a comprehensive bibliography are included.

B71-10007

NON-SYMMETRICAL TWO DIMENSIONAL SCATTERING PROGRAM

HATFIELD, J. RUSCH, W. V. T.

JAN. 1971

NPO-11576

Computer program, 2DSCAT, solves integral equation for currents induced by electric or magnetic plane wave incident upon one or more conducting cylinders. Subroutine, FIELD, assumes that an incident wave is perpendicular to the cylindrical surface. Restrictions on this program are given.

B71-10008

SYMMETRICAL TWO DIMENSIONAL SCATTERING PROGRAM

HATFIELD, J. RUSCH, W. V. T.

JAN. 1971

NPO-11578

Computer program solves integral equation for currents induced by electric or magnetic plane wave incident upon one or more conducting cylinders with a midplane of symmetry. Program utilizes symmetry of the geometry. Restrictions on the program are given.

B71-10017

TRACKING ANTENNA DEFORMATION PROGRAM

GALEF, A. E./TRW SYSTEMS GROUP/

JAN. 1971

GSFC-11191

Computer program provides capability for analyzing accelerometer data obtained from impulsive testing of large antennas, and of determining from that data pertinent characteristics /amplitude, frequency, damping/ of the structural modes excited by the impulse.

B71-10030

LIFT DISTRIBUTION IN A RECTANGULAR JET

JAMESON, A./GRUMMAN AEROSPACE CORP./

FEB. 1971

ARC-10424

Computer programs predict effect of slipstream-wing flow interaction on aerodynamic characteristics of deflected slipstream and tilt aircraft. One program calculates lift distribution, lift, and drag of wing in wide slipstream. Results permit development of simplified lifting surface theory for circular jet.

B71-10037

COMPUTER PROGRAM FOR PREDICTING CREEP BEHAVIOR OF

BODIES OF REVOLUTION

ADAMS, R./TRW SYSTEMS/ GREENBAUM, G.

FEB. 1971

NUC-11104

Computer program, CRAB, uses finite-element method to calculate creep behavior and predict steady-state stresses in an arbitrary body of revolution subjected to a time-dependent axisymmetric load. Creep strains follow a time hardening law and a Prandtl-Reuss stress-strain relationship.

B71-10038

FEATS - FINITE ELEMENT THERMAL STRESS ANALYSIS OF
 PLANE OR AXISYMMETRIC SOLIDS

SWANSON, J. A./WESTINGHOUSE ASTRONUCL. LAB./

09 COMPUTER PROGRAMS

FEB. 1971
NUC-10242

FEATS computer code uses finite element analysis to calculate steady state temperature and thermal stress fields for either axisymmetric or plane two-dimensional bodies with boundary conditions, including specified displacements, loads, and thermal boundary conditions.

B71-10039

AUTOTEM - AUTOMATED GEOMETRY MESHING AND HEAT CONDUCTION CALCULATION

LEE, A. Y./WESTINGHOUSE ASTRONUC. LAB./ WELLS, K. J.
FEB. 1971

NUC-10241

Temperature distribution for an arbitrary irregular body is calculated by AUTOTEM, which generates required input data automatically by computer. Temperature distribution is calculated for a two-dimensional plane section in x, y coordinates or for an axisymmetric irregular body in r, z coordinates.

B71-10052

FORTTRAN PROGRAMMING - A SELF-TAUGHT COURSE

BLECHER, S./COMPUTER SCI. CORP./ BUTLER, R. V. HORTON, M. MORROD, V.

APR. 1971 SEE ALSO NASA-CR-1478

LANGLEY-10738

Comprehensive programming course begins with numerical systems and basic concepts, proceeds systematically through FORTRAN language elements, and concludes with discussion of programming techniques. Course is suitable either for individual study or for group study on informal basis.

B71-10054

PROGRAM FOR IMPROVED ELECTRICAL HARNESS DOCUMENTATION AND FABRICATION

INNOVATOR NOT GIVEN /GE/ APR. 1971

GSFC-10386

Computer program provides automated print-out of harness interconnection table and automated cross-check of reciprocal pin/connector assignments, and improves accuracy and reliability of final documented data. Programs and corresponding library tapes are successfully and continuously employed on Nimbus spacecraft programs.

B71-10086

DIGITAL-CODED MATRIX SYSTEM SIMPLIFIES DESIGN AND CONSTRUCTION OF FLOW CHARTS

OTOOLE, E./MARTIN MARIETTA CORP./

APR. 1971

MSC-13539

Matrix system utilizing unique digital code enables drawing block diagrams with parallel blocks. Complete freedom is obtained in laying out diagram, and it is possible to go directly from matrix to finished drawing. Need to rough out diagram is eliminated and time involved is greatly reduced.

B71-10106

RADIATION VIEW FACTOR PROGRAM

LOVIN, J. K./LOCKHEED MISSILES AND SPACE CO./ LUBKOWITZ, A. W.

MAY 1971

M-PS-21075

Computer program, RAVFAC, calculates diffuse radiation view factors, using contour integrals. Technique is combined with finite difference /double summation/ technique to compose total program package.

B71-10108

FISCAL OUTPUT DATA PRODUCE VERSATILE GRAPHIC-NUMERIC CHARTS

POWELL, R. W./AERO JET-GEN. CORP./ ROMO, J. J.

MAY 1971

NUC-10394

Refined computerized plotting system produces low-cost graphic-numeric charts that illustrate fiscal data on monthly incremental or cumulative basis, or both. Output is in the form of hard copy or microfilm, or visual-aid transparencies prepared from hard copy for rapid management status presentations.

B71-10115

COMPUTER PROGRAM FOR THERMAL ANALYSIS OF SHADOW SHIELDS IN A VACUUM

BOYLE, R. J. KNOLL, R. H.

MAY 1971

LEWIS-11236

Computer program determines temperature profiles and heat transfer rates for shadow shielded cryogenic tank. Tank, shields, and thermal radiation heat source are all axisymmetric. Thermal analysis considers varying shield and tank temperatures, surface properties, and geometric arrangements. Similar heat source properties are also considered.

B71-10122

PUZZLE - A PROGRAM FOR COMPUTER-AIDED DESIGN OF PRINTED CIRCUIT ARTWORK

HARRELL, D. A. W. ZANE, R.

MAY 1971

LRL-10050

Program assists in solving spacing problems encountered in printed circuit /PC/ design. It is intended to have maximum use for two-sided PC boards carrying integrated circuits, and also aids design of discrete component circuits.

B71-10130

CSM PROGRAMS SM RCS PROPELLANT QUANTITY GAGING SYSTEMS PROGRAM

COX, G. R./N. AM. ROCKWELL CORP./ REYNOLDS, R. G.

MAY 1971

MSC-17308

Computer program calculates actual and useable remaining propellant quantities as required in positive expulsion rocket engine propellant feed system. Program establishes relationship between helium system pressures and temperatures and propellant weight remaining in tanks. Program is written in FORTRAN 4 for IBM-360 computer.

B71-10133

MULTI-DIMENSIONAL REAL FOURIER TRANSFORM

KROGH, F. T.

MAY 1971

NPO-11648

Four subroutines compute one-dimensional and multi-dimensional Fourier transforms for real data, multi-dimensional complex Fourier transforms, and multi-dimensional sine, cosine and sine-cosine transforms. Subroutines use Cooley-Tukey fast Fourier transform. In all but one-dimensional case, transforms are calculated in up to six dimensions.

B71-10134

HIGH-IMPACT DYNAMIC-RESPONSE ANALYSIS OF NONLINEAR STRUCTURES

GUPTA, K. K.

MAY 1971

NPO-11716

Program predicts expected deformations and stresses in nonlinear simple geometric structures subjected to high-impact loading. Technique is based on node-wise predictor-corrector approach and requires moderate computer storage and run time for most problems. Program extends to include physical and geometrical nonlinearities.

B71-10138

SUBROUTINES FOR EVALUATING SINGLE AND MULTIPLE

INTEGRALS USING MODIFIED ROMBERG METHOD

BUNTON, W. R. DIETHELM, H.

MAY 1971

NPO-11718

Routines, which have been thoroughly tested, are found to be equal to or better than comparable routines. They are more reliable than SQUANK and capable of solving a larger class of problems.

B71-10147

QUICK RESPONSE TARGETING PROGRAM

BOSLEY, J. T./BOEING CO./

MAY 1971

M-PS-15157

Computer program generates and verifies operational launch vehicle targeting presettings for lunar free-return missions and lunar landing missions. Program is applicable in astronomy and nuclear physics, and in areas where improved targeting techniques are valuable.

09 COMPUTER PROGRAMS

B71-10151
METHOD FOR CONSTRUCTING PERIODIC ORBITS IN NONLINEAR
DYNAMIC SYSTEMS
BENNETT, A. G./BOEING CO./ HANAFY, L. M. PALMORE, J.
I.
MAY 1971
M-FS-14654

Method is modification of generalized
Newton-Raphson algorithm for analyzing two-point
boundary problems. It constructs sequence of
solutions that converge to precise dynamic
solution in the sequence limit. Program
calculates periodic orbits in either circular or
elliptical restricted three-body problems.

B71-10153
COMPUTER PROGRAM FOR CALCULATING AERODYNAMIC FORCES ON
BLADE SECTIONS
MC NALLY, W. D.
JUN. 1971 SEE ALSO LEWIS-10743 LEWIS-10789,
LEWIS-11097
LEWIS-11382

Calculation is taken from pressure or velocity
distribution along blade surface. Blade sections
have either one or two /tandem/ blade segments.
Program is recommended primarily for use with
ideal flow pressure distributions where forces in
drag direction are neglected.

B71-10155
COMPUTING INCOMPRESSIBLE LAMINAR AND TURBULENT
BOUNDARY LAYER FORMATION
HERRING, H. J./PRINCETON UNIV./ MELLOR, G. L.
MAY 1971
LEWIS-11190

Program generates initial laminar conditions, such
as in Falkner-Skan similarity flows, or turbulent
equilibrium profiles. Initial profile input data
is used. Combination with inviscid-freestream
calculations to predict entire flow field in
turbine cascade or around airfoil is possible.

B71-10181
ACCUMULATIVE WEIGHTS PROGRAM
PATE, W. B./BOEING CO./ PINCHA, P. J.
JUN. 1971
M-FS-15066

Program provides capability of assessing weight
above given structural station planes for inert
and variable masses for any selected loading
condition. Output is produced that yields weight
data concentrated on and/or cantilevered from
stations along Saturn 5 vehicle's verticle axis.
Input data availability limits program's function
to vertical structures.

B71-10185
ELAS8 - COMPUTER PROGRAM FOR LINEAR STRUCTURE
EQUILIBRIUM PROBLEMS
UTKU, S.
JUN. 1971 SEE ALSO B68-10187
NPO-11555

Program generates and solves governing equations
for unknown deflection of mesh points as if
problem were to locate stationary point of total
potential function associated with given loading
and unknown deflections. Solution is obtained by
means of displacement method and finite element
technique.

B71-10186
NUMERICAL INTEGRATION OF SECOND ORDER DIFFERENTIAL
EQUATIONS
SHANKS, E. B./VANDERBILT UNIV./
JUN. 1971
M-FS-20536

Performance characteristics of higher order
approximations of Runge-Kutta type are analyzed,
and performance predictors for time required on
machine and for error size are developed.
Technique is useful in evaluating system
performance, analyzing material characteristics,
and designing inertial guidance and nuclear
instrumentation and materials.

B71-10211
ROTOR DYNAMIC RESPONSE ANALYSIS PROGRAM
SHEN, F. A./ROCKETDYNE/
JUL. 1971
HQ-10579

Computer routine is similar to Holzer's method in
torsional vibration treatment, and Prohl's and
Hyllestad's approach in computing rotor
deflection. Matrix iteration technique is used
to compute rotor dynamic response by a simulated
discrete mass system.

B71-10215
DIGITAL COMPUTER PROGRAM FOR ANALYZING CHUGGING
INSTABILITIES
SZUCH, J. R.
JUL. 1971
LEWIS-11294

Program computes combustion delays, gas residence
time, characteristic velocity, and other
steady-state parameters required for solution of
the characteristic equation. Equation is solved
for critical values of injector pressure drops
and chugging frequency.

B71-10238
COMPUTER-AIDED DESIGN OF LARGE-SCALE INTEGRATED
CIRCUITS - A CONCEPT
SCHANSAN, T. T./M&S COMPUTING, INC./
JUL. 1971
M-FS-20600

Circuit design and mask development sequence are
improved by using general purpose computer with
interactive graphics capability establishing
efficient two way communications link between
design engineer and system. Interactive graphics
capability places design engineer in direct
control of circuit development.

B71-10240
STORED PROGRAM CONCEPT FOR ANALOG COMPUTERS
HANNAUER, G., III/ELECTRON. ASSOCIATES INC./ PATHORE,
J. R.
JUL. 1971
M-FS-20874

Optimization of three-stage matrices,
modularization, and black boxes design techniques
provides for automatically interconnecting
computing component inputs and outputs in general
purpose analog computer. Design also produces
relatively inexpensive and less complex automatic
patching system.

B71-10243
DSIF STATION SCHEDULES
FLARITY, L. D. HANSON, R. J. THOM, E. H.
JUL. 1971
NPO-11547

System manages Deep Space Instrumentation
Facilities /DSIF/ equipment construction and
modification planning. Versatile program applies
to such tasks as employee time and task
schedules, pay schedules, operations schedules,
and plant and equipment procurement,
construction, modification or service.

B71-10244
MANPOWER FORECAST PROGRAM
MC CORNOCK, M. D. MINER, R. R.
JUL. 1971
NPO-11551

Program reports distribution of actual manpower
levels in each section versus accounts, projects
versus sections, sections versus manpower
classes, and project offices versus sections.

B71-10248
VARIABLE ORDER INTEGRATORS FOR THE NUMERICAL SOLUTION
OF ORDINARY DIFFERENTIAL EQUATIONS
KROGH, F. T.
JUL. 1971
NPO-11643

Series of computer subroutines integrates systems
of ordinary differential equations and is used
for numerical quadrature.

B71-10250
BATTERY SIMULATION PROGRAM
ABREU, A. SLONSKI, J. P.
JUL. 1971
NPO-11580

Computer program calculates spacecraft battery
energy at specific times dictated by input
sequence of recharge, discharge, and no activity
phases. Recharge phases are assumed during times

09 COMPUTER PROGRAMS

not specified, unless batteries are fully charged. Warnings are printed when energy falls below specified level. Program assumes two identical batteries.

B71-10267
ANALYSIS OF LOW RESOLUTION MASS SPECTRA
BABST, R. W./SPERRY RAND CORP./ SHAPIRO, H.
AUG. 1971
GSFC-11279

Computer program determines gas constituents from measurements of mass/peak-height spectrum from residual gas analyzer. Applications of program include residual gas analysis for work in space environmental simulators, space environment contamination, and air pollution monitoring.

B71-10284
ON-LINE ANALYSIS OF RANDOM VIBRATIONS
COLE, H. A., JR.
AUG. 1971
ARC-10154

Measuring device, Randomec, provides continuous on-line signatures representative of system free vibration curve. Selected points on curve are used in control and failure detection systems. Apparatus applied to both linear and nonlinear systems under nonstationary vibratory states.

B71-10285
NASTRAN COMPUTER SYSTEM LEVEL 12.1
BUTLER, T. G.
AUG. 1971 SEE ALSO NASA-SP-221, NASA-SP-222,
NASA-SP-223, NASA-SP-224, NASA-SP-260
GSFC-10991

Program uses finite element displacement method for solving linear response of large, three-dimensional structures subject to static, dynamic, thermal, and random loadings. Program adapts to computers of different manufacture, permits up-dating and extension, allows interchange of output and input information between users, and is extensively documented.

B71-10294
RAY TRACING PROGRAM WITH OPTIONS FOR DIFFRACTION GRATINGS
HOWELL, B. J./SPERRY RAND CORP./
AUG. 1971
GSFC-11305

Diffraction theory, developed in vectorial form and coded into ray tracing routines, permits tracing rays of any wavelength through surfaces that are plane, spherical, conical, or aspheric polynomial. Ruled diffraction gratings may run in either X-direction or Y-direction, where Z is optical axis.

B71-10295
DETERMINATION OF RADIATION INTERCHANGE FACTORS
BOBCO, R. P./HUGHES AIRCRAFT CO./ EGENDORF, F. L. MC
GRATH, R. J.
AUG. 1971
MSC-13475

Method utilizes an analytical model, a method of solution which is compatible with digital computer analysis, and a generalized computer program to carry out the computations.

B71-10296
SPIN VECTOR CONTROL OF A SPINNING SPACE STATION
HENDRICKS, T./MARTIN MARIETTA CORP./
AUG. 1971
M-FS-21333

Digital computer program simulates system and related functions. Program is intended for, but not limited to, altitude control studies of rotating space station. Russel's method of formulating and solving motion equations for system of rigid bodies connected by movable joints is applied. Program features are listed.

B71-10306
CLOSED-LOOP CONTROL OF STOCHASTIC NONLINEAR SYSTEMS
SCHMIDT, G. T./MIT/
AUG. 1971
MSC-13858

Technique resolves problems in complex control systems, such as those used for space vehicle

guidance and control. Main disadvantage of procedure is that it is only appropriate in situations where trajectory concept is valid.

B71-10308
ENERGY LEVELS AND TRANSITION PROBABILITY MATRIX
ELEMENTS OF RUBY FOR LASER APPLICATIONS
BERWIN, R. W.
AUG. 1971
NPO-11687

Program computes fine structure energy levels of ruby as a function of magnetic field. Included in program is matrix formulation, each row of which contains a magnetic field and four corresponding energy levels.

B71-10314
TCB OPERATION SUPPLY INVENTORY SYSTEM /TCBSYS/
TU, H.-Y./COMPUTING AND SOFTWARE, INC./
AUG. 1971
GSFC-11306

System produces inventory report for each updated period and special report for long term inventory information summary. Report summarizes consumption, outstanding orders, and balance of each inventory item. System generates, corrects, and adjusts inventory tapes. Restrictions of system are listed.

B71-10321
MAPS - A COMPUTERIZED MANAGEMENT ANALYSIS AND PLANNING
SYSTEM
PACKE, D. R. RAFFAELI, G. A.
AUG. 1971
LEWIS-11349

Program lists work structure of projects at all levels. System integrates work item, its schedule, its status against the schedule, responsible personnel, and explanatory comments. Structure of MAPS promotes natural organization of project work elements, project features and uses are given.

B71-10372
ANALYSIS OF MULTILAYERED FIBER COMPOSITES
CHAMIS, C.
OCT. 1971
LEWIS-11347

Multilevel analysis computer program is useful in fiber matrix composites diagnosis, in structural syntheses of multilayered thornel/epoxy composite plates, in buckling studies of simply supported multilayered fiber composite plates, and in computing lamination residual stresses in angle ply composites.

B71-10373
COMPUTATION OF GROUP TABLE ALPHANUMERIC DISPLAY
ALLEN, G. EVANS, D. D.
SEP. 1971
LEWIS-11346

Computer program, using only group elements as input data, provides machine computation of group tables used for proving theorems and algorithms of finite groups. Program is written for second generation computers.

B71-10374
DYNAMICS OF SHORT PRESSURE PROBES
ENGLUND, D. R. NYLAND, T. W.
SEP. 1971
LEWIS-11293

Report presents practical information for incorporating particle impact protection features and average total pressure measurement into probe design while optimizing probe transient response. Computer program calculates probe response, based on Bergh-Tijdeeman equation.

B71-10376
NEW PROCEDURE FOR DETERMINING MINIMUM TIME ORBIT
TRANSFERS
DAVIS, D. A./BOEING CO./
OCT. 1971
M-FS-14804

Computer program includes time minimizing function required for propellant constrained minimum time impulsive transfer between coplanar circular orbits or unrestricted orbits. Basic formulation

09 COMPUTER PROGRAMS

is extended to include inclined circular or inclined elliptic orbits.

B71-10377

COMPUTER PROGRAM FOR DISCOUNTED CASH FLOW/RATE OF RETURN EVALUATIONS

ROBSON, W. D./ROCKETDYNE/

OCT. 1971

N-PS-19040

Technique, incorporated into set of three computer programs, provides economic methodology for reducing all parameters to financially sound common denominator of present worth, and calculates resultant rate of return on new equipment, processes, or systems investments.

B71-10382

STUDY-SIMULATION OF SPACE STATION DYNAMICS

GAITENS, M. J./GE/

OCT. 1971

N-PS-21227

Matrix algebra translator and executor /MATE/ takes equations describing structural control system environmental interaction problem for flexible spacecraft components and loads them into self programming computer.

B71-10384

METABOLIC BALANCE ANALYSIS PROGRAM

ROMBACH, J./MARTIN MARIETTA CORP./

OCT. 1971

N-PS-21237

Computer program calculates 28 day diet for life support consumables requirements and waste removal. Equations representing food breakdown into carbohydrates, fats, and proteins, modified to account for digestive materials and indigestible crude fibers, formulate total energy consumption. Program applications are listed.

B71-10386

THERMAL ANALYSIS SYSTEM /TAS-1/ PROGRAM

HULTBERG, J. A. OBRIEN, P. F.

OCT. 1971

NPO-11849

Digital computer program develops temperature control system which maintains various subsystems within proper temperature limits. Coding is simple and input rules are easy to use and remember. Output format is easy to understand and to analyze for error diagnosis.

B71-10389

TOLERANCE ANALYSIS PROGRAM

WATSON, H. K./N. AM. ROCKWELL CORP./

OCT. 1971

MSC-17487

Digital computer program determines tolerance values of end to end signal chain or flow path, given preselected probability value. Technique is useful in the synthesis and analysis phases of subsystem design processes.

B71-10390

DOUBLE PRECISION TRAJECTORY PROGRAM /DPTRAJ 2.2C/

JOSEPH, A. E. KHATIB, A. R. STRAND, J. STURMS, F. M.,

JR. TALBOT, T. D. WARNER, M. R. WITT, J.

OCT. 1971

NPO-11798

Four part program computes trajectory of space probe moving in solar system and subject to variety of forces.

B71-10392

COMPUTER PROGRAM /TURBLE/ FOR CALCULATING VELOCITIES AND STREAMLINES IN TURBOMACHINES

KATSANIS, T. MC NALLY, W. D.

OCT. 1971 SEE ALSO B68-10097

LEWIS-10788

Program is used in design of turbomachinery blade rows, where fluid velocities in blade to blade passage must be obtained. TURBLE requires input data on blade geometry, meridional stream-channel geometry, total flow conditions, weight flow, and inlet and outlet flow angles.

B71-10398

STEADY TEMPERATURE AND DENSITY DISTRIBUTIONS IN A GAS CONTAINING HEAT SOURCES

DAVISON, H. W.

OCT. 1971

LEWIS-10905

Computer program, STADDIG, is based on steady state, one dimensional heat transfer calculation using cylindrical coordinates. Program allows for conduction across gas and container walls. Heat is dissipated from walls by forced convection cooling with incompressible coolant. Heat sources are included in coolant, gas, and walls.

B71-10399

ANALYSIS AND DESIGN OF A FLAT CENTRAL FINNED-TUBE RADIATOR

AUER, B. M. HALLER, H. C. KREBS, R. P.

OCT. 1971

LEWIS-10893

Computer program based on fixed conductance parameter yields minimum weight design. Second program employs variable conductance parameter and variable ratio of fin length to tube outside radius, and is used for radiator designs with geometric limitations. Major outputs of the two programs are given.

B71-10400

COMPUTER PROGRAM OPTIMIZES DESIGN OF NUCLEAR RADIATION SHIELDS

LAHTI, G. P.

OCT. 1971

LEWIS-10998

Computer program, OPEX 2, determines minimum weight, volume, or cost for shields. Program incorporates improved coding, simplified data input, spherical geometry, and an expanded output. Method is capable of altering dose-thickness relationship when a shield layer has been removed.

B71-10401

MICROBIAL BURDEN PREDICTION MODEL PROGRAM

MEUSER, R. F./MARTIN MARIETTA CORP./ NELSON, B. A.

OCT. 1971

NPO-11709

Model supplements biological surveys of spacecraft by simulating microbial burden accumulation process during periods when surveys are not taken. Important application of model is to predict microbial loading on spacecraft landing capsule immediately prior to terminal heat sterilization.

B71-10402

COMPUTER PROGRAM CALCULATES TRANSONIC VELOCITIES IN TURBOMACHINES

KATSANIS, T.

OCT. 1971

LEWIS-10977

Computer program, TSONIC, combines velocity gradient and finite difference methods to obtain numerical solution for ideal, transonic, compressible flow for axial, radial, or mixed flow cascade of turbomachinery blades.

B71-10413

FRACTURE MECHANICS EVALUATION OF TI-6Al-4V PRESSURE VESSELS

COX, D. G./BOEING CO./

NOV. 1971

MSC-13995

Computer program calculates maximum potential flaw depth after specific cyclic pressure history. Kobayashi's solution to critical stress intensity equation and empirical relation for flaw growth rate are used. Program assesses pressure vessels of any material but only cylindrical or spherical shapes.

B71-10414

FRAME MODAL ANALYSIS

GUYAN, R. J./N. AM. ROCKWELL CORP./ HECKENLAIBLE, R.

N.

NOV. 1971

MSC-17562

Computer model calculates natural frequencies and modal displacements of three-dimensional frame structures, and generates stiffness and mass matrices. Structures may be divided into several substructures prior to calculation of modal characteristics.

09 COMPUTER PROGRAMS

B71-10423
ERROR EVALUATION FOR DIFFERENCE APPROXIMATIONS TO ORDINARY DIFFERENTIAL EQUATIONS
 HAMMOND, J. L., JR./GA. INST. OF TECH./
 NOV. 1971 SEE ALSO B71-10424 NASA-CR-103015
 M-FS-21610
 Method involves relationships between errors introduced by using finite sampling rates and parameters describing specific numerical method used. Procedure is used in design and analysis of digital filters and simulators.

B71-10424
HYBRID COMPUTER TECHNIQUES FOR SOLVING PARTIAL DIFFERENTIAL EQUATIONS
 HAMMOND, J. L., JR./GA. INST. OF TECH./ ODOWD, W. H.
 NOV. 1971 SEE ALSO B71-10423
 M-FS-21386

Techniques overcome equipment limitations that restrict other computer techniques in solving trivial cases. The use of curve fitting by quadratic interpolation greatly reduces required digital storage space.

B71-10431
MANPOWER MANAGEMENT INFORMATION SYSTEM /MIS/
 GRAVETTE, M. C./COMPUTER SCI. CORP./ KING, W. L.
 NOV. 1971
 M-FS-21477

System of programs capable of building and maintaining data bank provides all levels of management with regular manpower evaluation reports and data source for special management exercises on manpower.

B71-10441
VIBRATIONAL TRANSFER FUNCTIONS FOR BASE EXCITED SYSTEMS
 ERNST, C./MARTIN MARIETTA CORP./ JONES, P. J.
 NOV. 1971
 M-FS-21432

Computer program GD203 develops transfer functions to compute governing vibration environment for complex structures subjected to a base motion.

B71-10447
MINIMUM WEIGHT METEOROID SHIELDING DETERMINATION
 FURUKI, S. C./N. AM. ROCKWELL CORP./ MC HUGH, A. H.
 RICHARDSON, A. J.
 NOV. 1971
 MSC-17017

Computer program determines minimum shielding necessary for adequate protection of flight hardware, based on component physical size, methods of shielding to be used, and amount of damage which can be sustained without component failure.

B71-10448
FORTRAN 4 DIGITAL PROGRAM CHANGER
 MADDEN, M. F./N. AM. ROCKWELL CORP./
 NOV. 1971
 MSC-17567

Computer program modifies other source language programs as aid to debugging, checkout and final documentation to eliminate manual performance of rearranging and incrementing statement numbers, identifying and sequencing cards and inserting and/or removing end-of-batch symbols.

B71-10453
GRAPHICAL METHOD FOR ANALYZING DIGITAL COMPUTER EFFICIENCY
 CHAN, S. P./SANTA CLARA UNIV./ MUNOZ, R. M.
 NOV. 1971
 ARC-10210

Analysis method utilizes graph-theoretic approach for evaluating computation cost and makes logical distinction between linear graph of a computation and linear graph of a program. It applies equally well to other processes which depend on quantitative edge nomenclature and precedence relationships between edges.

B71-10456
OPTICAL DESIGN AND ANALYSIS PROGRAM
 HEREDITH, C. F./SPERRY RAND CORP./
 NOV. 1971
 GSFC-11393

Computer program provides efficient handling of optical analysis equations and is sufficiently general in approach to accept wide variety of systems. Diagnostic messages are generated to aid user in pinpointing any inconsistencies in system definition.

B71-10462
RADIATION DIFFRACTION CALCULATION PROGRAM /DIFF2/
 INNOVATOR NOT GIVEN /PROGRAMMING METHODS, INC./ NOV. 1971
 GSFC-11422

Computer program computes maximum possible strength of interference pattern sent from high altitude tracking and data relay satellite to low altitude user satellite.

B71-10463
CLOUD-FREE RESOLUTION ELEMENT STATISTICS PROGRAM
 LILEY, B./N. AM. ROCKWELL CORP./ MARTIN, C. D.
 NOV. 1971
 GSFC-11494

Computer program computes number of cloud-free elements in field-of-view and percentage of total field-of-view occupied by clouds. Human error is eliminated by using visual estimation to compute cloud statistics from aerial photographs.

B71-10472
LANDING DYNAMICS PROGRAM FOR IMPACT ATTENUATING VEHICLES /LANDIT/
 KNOELL, A. C. PATTON, R. H.
 DEC. 1971
 NPO-10840

Computer program accurately predicts impact response of previously designed disc-type Mars prototype landing vehicle. Program may be used in any design area where energy dissipation is considered.

B71-10473
COMPUTER DESIGN OF EXTENSION SPRINGS
 MOORE, D. R./N. AM. ROCKWELL CORP./
 DEC. 1971
 M-FS-24073

Computer program speeds up design process of tension springs and simultaneously optimizes the design by varying the input.

B71-10490
MONTE CARLO PROGRAM FOR THE TRANSPORT OF NEUTRONS AND GAMMA RAYS
 JORDON, T. M./A.R.T. RES. CORP./
 DEC. 1971
 LEWIS-11403

Computer program computes transport of neutrons and gamma rays in complex geometries and fluxes averaged over specified regions and surfaces of the geometry.

B71-10491
SYNTHESIS OF DYNAMIC SYSTEMS
 ADMIRE, J./MARTIN MARIETTA CORP./ WOHLER, R.
 DEC. 1971
 M-FS-21490

FORTRAN matrix analysis /FORNA/ program finds solutions of small and medium size structural dynamics problems of up to 150 deg of freedom.

B71-10492
OPTIMIZED TECHNIQUES AND REQUIREMENTS FOR COMPUTER IMPROVEMENT OF STRUCTURAL WELD RADIOGRAPHS
 THOMAS, D. T.
 DEC. 1971
 M-FS-21627

Hardware and software specification covers requirements for using subroutines to improve structural weld photographs.

B71-10499
A LOW-ALTITUDE SATELLITE INTERACTION STUDY
 BIENKOWSKI, G. K./RCA/ HOLMAN, J. M. L. MC KINLEY, R. R. SISKIND, S. M.
 DEC. 1971
 GSFC-11384

Two computer programs calculate interaction effects of high speed spacecraft on the environment at altitudes from 90 km to 150 km. EXT program determines fluid field in bodies of arbitrary geometries in transient flow regime. INT program

uses EXT output and measures flow conditions inside spacecraft body.

B71-10500

AUTOMATED PREVENTIVE MAINTENANCE PROGRAM
CEA, E. J./SPERRY RAND CORP./ GRIEGER, T. H.
DEC. 1971
GSFC-11408

Maintenance program which is concise and inexpensive to operate adapts to almost any system that has a FORTRAN compiler. Program operates on a stored data base with an output consisting of scheduling information and various management reports.

B71-10501

PREDICTION OF STALL CHARACTERISTICS OF STRAIGHT WING AIRCRAFT

FOX, C. H. KISIELEWSKI, E./DYNASCI. CORP./ MC VEIGH, M. A.
DEC. 1971 SEE ALSO NACA-TM-1036, NACA-TR-1090,
NASA-CR-1646
LANGLEY-11013

Digital computer program considers an unswept wing with a circular or elliptical fuselage. Wing has partial or full span deflected flaps and must have an aspect ratio of 6 or greater.

B71-10508

DESIGN AND EVALUATION OF CONVECTIVELY COOLED NOZZLES
DERDERIAN, G. DUSCHA, R. A. ROHDE, J. E.

DEC. 1971
LEWIS-10894

Computer program utilizes a desired gas sidewall temperature profile as an input and calculates the coolant passage dimensions required to achieve it. Second program utilizes fixed coolant passage dimensions as an input and calculates the resulting temperature profile.

B71-10509

EVALUATION OF ROTATING, INCOMPRESSIBLY LUBRICATED, PRESSURIZED THRUST BEARINGS
FLEMING, D. P.

DEC. 1971
LEWIS-11511

Program evaluates a series hybrid, fluid film ball bearing consisting of an orifice compensated pressurized thrust bearing in conjunction with a self-acting journal bearing. Oil viscosities corresponding to experimentally measured ball bearing outer-race temperatures were used.

B71-10532

A STUDY OF HIGH FREQUENCY NONLINEAR COMBUSTION INSTABILITY IN BAFFLED ANNULAR LIQUID PROPELLANT ROCKET MOTORS
ABREU, A. BURSTEIN, S. Z. KUSHIDA, R. O. SCHECHTER, H.
DEC. 1971
NPO-11800

Computer program contains mathematical model which provides relationship between engine gas dynamics and combustion processes. Mathematically simulated explosions initiate gas disturbances. Design methods for damping disturbances can be studied to prevent future engine shutdown or destruction.

B71-10535

VIBRATION CHARACTERISTICS OF RING-STIFFENED ORTHOTROPIC SHELLS OF REVOLUTION
ADELMAN, H. M. CATHERINES, D. S. DURLING, B. J.
STEEVES, E. C. WALTON, W. C., JR.
DEC. 1971

LANGLEY-10989

Computer program solves vibration modes and frequencies of thin shells of revolution having general meridional curvature and orthotropic elastic properties in order to evaluate the dynamic behavior of structures with thin shelled components.

B72-10015

SOFTWARE CONTROL FOR LARGE SCALE ON-BOARD CHECKOUT: A CONCEPT

H. K. Grounds (IBM) and D. H. Norton, Jr. (IBM)
1972
MSC-13977

Two level system checkout in which first level satisfies continuous monitoring requirements and second level provides fault isolation to satisfy maintenance requirements, provides self-checking capability for monitoring system and enables recovery from unexpected error or failure interruptions. System must perform operational duties of navigation, control, and experimentation.

B72-10023

ALGORITHM FOR LIAPUNOV STABILITY ANALYSIS

G. R. Geiss (Grumman Aerospace Corp.), V. D. Cohen (Grumman Aerospace Corp.), and D. S. Rothschild (Grumman Aerospace Corp.)

1972 See also NASA-CR-1729; NASA-CR-73383

ARC-10498

Development of algorithm provides automatic computation of quadratic estimate of domain of stability for stable equilibrium states of nonlinear systems of ordinary differential equations.

B72-10064

PREDICTION OF DUCTED FAN PERFORMANCE

M. R. Mendenhall (Nielsen Eng. and Res., Inc.) and S. B. Spangler (Nielsen Eng. and Res., Inc.)

Aug. 1972

ARC-10615

Computer program to predict performance of ducted fan combination at specified advance ratio and angle of attack is described. Parameters affecting performance of ducted fan are presented. Information obtained from computer program is explained for various conditions considered.

B72-10065

VARIABLE DIMENSION AUTOMATIC SYNTHESIS PROGRAMS (VASP)

J. S. White and H. Q. Lee

1972

ARC-10616

Variable dimension FORTRAN 4 version of the Automatic Synthesis Program (ASP) compensates for limitations within the program itself. Improvements are versatile programming language, convenient input/output format, new subprograms, variable dimensioning, and efficient storage.

B72-10067

PROGRAM TO DETERMINE RADIATING, NONADIABATIC, INVISCID FLOW OVER A BLUNT BODY BY THE METHOD OF INTEGRAL RELATIONS

F. W. Taylor

1972

LANGLEY-11048

Computer program performs the many calculations necessary for solving radiating, nonadiabatic flow of air in chemical equilibrium. Solution method provides accurate description of blunt body flow field in subsonic region.

B72-10068

PROGRAM FOR THE TRANSIENT RESPONSE OF ABLATING AXISYMMETRIC BODIES INCLUDING THE EFFECTS OF SHAPE CHANGE

L. M. Howser and S. S. Tompkins

1972

LANGLEY-11049

Governing differential equation, boundary conditions for the analysis on which computer program is based, and method of solution of resulting finite difference equations are discussed in the documentation.

B72-10069

MAIN TANK INJECTION PRESSURIZATION PROGRAM

E. C. Cady (McDonnell-Douglas Corp.) and D. W. Kendle (McDonnell-Douglas Corp.)

Dec. 1972

LEWIS-11368

Computer program predicts performance of fluorine-hydrogen main tank injection pressurization system for full range of liquid-hydrogen-fueled space vehicles. Analytical model includes provisions for heat transfer, injectant jet penetration, and ullage

09 COMPUTER PROGRAMS

gas mixing. Analysis predicts GF2 usage, ullage gas and tank wall temperatures, and LH2 evaporation.

B72-10070

DESIGN OF TWO-DIMENSIONAL SHARP-EDGED-THROAT SUPERSONIC NOZZLE WITH BOUNDARY-LAYER CORRECTION

L. J. Goldman and M. R. Vanco
1972

LEWIS-11636

Computer program accounts for effective nozzle geometry changes due to boundary layer displacement thickness. Program input and output are discussed.

B72-10071

PROGRAM FOR DETERMINATION OF RADIATION INTERCHANGE FACTORS

L. W. Fesler (N. Am. Rockwell Corp.) and T. S. McClintic (N. Am. Rockwell Corp.)
Dec. 1972

MSC-17563

Digital computer model was devised for determining thermal and solar radiation interchange factors. Program computes interchange factors among surfaces having any combination of following properties: diffuse emittance and reflectance, diffuse emittance and specular reflectance, diffuse emittance and components of diffuse and specular reflectance, and directional emittance and bidirectional reflectances.

B72-10072

WIND TRAJECTORY TRACING FOR AIR POLLUTION STUDIES (AIRPOL)

A. B. Street and J. N. Strand
1972

NPO-11892

Wind trajectory computer program, consisting of data handling program and analysis program, traces Los Angeles Basin wind patterns either backward or forward in time. Program may be applicable to other areas.

B72-10073

STRUCTURAL DESIGN AND STRESS ANALYSIS PROGRAM FOR ADVANCED COMPOSITE FILAMENT-WOUND AXI-SYMMETRIC PRESSURE VESSELS (COMTANK)

A. C. Kneill
1972

NPO-11943

Computer program has been specifically developed to handle, in an efficient and cost effective manner, planar wound pressure vessels fabricated of either boron-epoxy or graphite-epoxy advanced composite materials.

B72-10111

PROGRAM FOR CALCULATING LAMINAR AND TURBULENT BOUNDARY LAYERS IN ARBITRARY PRESSURE GRADIENTS

W. D. McNally
1972

LEWIS-11097

Computer program predicts growth of boundary layers along any surface where air is flowing. Two integral methods, Cohen-Reshotko and Sasman-Cresci, calculate laminar boundary layers and turbulent boundary layers, respectively; Schlichting-Granville method predicts transition from laminar to turbulent flow.

B72-10142

STANDARDIZATION AND QUALIFICATION OF COMPUTER PROGRAMS FOR CIRCUIT DESIGN

D. F. Martin (Calif. Univ.), L. P. McNamee (Calif. Univ.), D. E. Meyerhoff (Calif. Univ.), and T. S. Chow (Calif. Univ.)
1972

M-FS-21537

Study presents methods and initial procedures which may be obtained for development of more efficient uniform network analysis input language and theoretical tools to prove equivalence of data representations.

B72-10153

MISLIFT AND MISS-DRAG PROGRAMS

C. M. Jackson, Jr. and W. C. Sawyer
May 1972

LANGLEY-10932; LANGLEY-10935

Method, developed and coded for digital computation, predicts aerodynamic loading on configurations for which linear theory assumptions are violated. Program is written in FORTRAN 4 for use on CDC-6000 series computers.

B72-10182

PROLATE SPHEROIDAL SLOSH MODEL FOR FLUID MOTION

H. A. Flanders (TRW Systems Group)
May 1972

MSC-13864

Mathematical model, designed for zero gravity conditions, analyzes dynamic effects of large amplitude fluid motion interior to a rigid body. It has two advantages over other mathematical models: (1) constrains slosh motion to given region in natural manner, and (2) allows equilibrium position of slosh mass to be anywhere on slosh surface.

B72-10214

RELIABILITY ANALYSIS BASED ON OPERATIONAL SUCCESS CRITERIA

F. G. Esmond (Santa Barbara Res. Center) and M. D. Johnson (Santa Barbara Res. Center)
May 1972

ARC-10490

Failure Modes, Effects, and Criticality Analysis Model disregards failures of insignificant components. Assumptions used to establish baselines for reliability prediction and analytical method are listed. Techniques are applicable to any commercial design and can be extended into software or management systems.

B72-10222

OPTIMIZATION TECHNIQUE FOR PROBLEMS WITH AN INEQUALITY CONSTRAINT

K. J. Russell (Hughes Aircraft Co.)
1972

ARC-10522

General technique uses a modified version of an existing technique termed the pattern search technique. New procedure called the parallel move strategy permits pattern search technique to be used with problems involving a constraint.

B72-10225

INDEFINITE INTEGRALS OF PRODUCTS OF SOME EXPONENTIAL AND TRIGONOMETRIC FUNCTIONS

W. Rostafinski
May 1972

LEWIS-11493

Two integrals have been developed which are needed to solve certain problems of mathematical physics related to the Bessel and Euler equations. Integrals of this type have known application in problems using cylindrical coordinates.

B72-10253

COMPUTER PROGRAM DRAWS THREE-DIMENSIONAL SURFACES

R. B. Canright, Jr. and P. Swigert
May 1972 See also NASA-TM-X-1589

LEWIS-10482

Computer plotting program PLOT 3D draws views of surface forms $z = f(x,y)$. Surface thus defined by program may be drawn after arbitrary rotations. Program portrays behavior of various functions involving two variables in many engineering, physics, and mathematical relationships.

B72-10261

DUAL REDUNDANT CORE MEMORY SYSTEMS

F. E. Hull (Martin Marietta Corp.)
Jun. 1972

MSC-13993

Electronic memory system consisting of series redundant drive switch circuits, triple redundant majority voted memory timing

functions, and two data registers to provide functional dual redundancy is described. Signal flow through the circuits is illustrated and sequence of events which occur within the memory system is explained.

B72-10265

SNAP DYNAMICS

L. Kiefling, W. D. Whetstone, and C. E. Jones

Jun. 1972

M-FS-21531

Computer program calculates normal vibration modes of complex structures eliminating excessively large amounts of input data, run time, and core storage. Provision for accuracy improvement is also included.

B72-10267

VIDEO INFORMATION SYSTEM

E. R. Ritch (Ampex Corp.)

Jun. 1972

M-FS-21711

Computerized information storage and display system directs storage of documents, drawings, photographs, fingerprints, etc., and permits rapid retrieval for real-time viewing on remote consoles.

B72-10299

RAPID ANALYSIS OF ELECTRIC PROPULSION MISSIONS

A. C. Masey

Sep. 1972

ARC-10430

Computer program has been designed to handle computations for low thrust missions rapidly and with acceptable accuracy. Program defines performance and system requirements of electrically-propelled unmanned planet-orbiter and flyby missions. The program is written in FORTRAN 4 for use on an IBM 360 or CDC 6600 computer.

B72-10311

CUBIC SPLINE FUNCTIONS FOR CURVE FITTING

J. D. Young

Dec. 1972 See also UCRL-17659; UCRL-17742; UCRL-18253; UCRL-18346; UCRL-18364

LRL-10034

FORTRAN cubic spline routine mathematically fits curve through given ordered set of points so that fitted curve nearly approximates curve generated by passing infinite thin spline through set of points. Generalized formulation includes trigonometric, hyperbolic, and damped cubic spline fits of third order.

B72-10335

MATHEMATICAL TECHNIQUES FOR ESTIMATING OPERATIONAL READINESS OF COMPLEX SYSTEMS

I. D. Jacquier (N. Am. Rockwell Corp.) and P. A. Miltz (N. Am. Rockwell Corp.)

Jul. 1972

MSC-17694

Development of methods for predicting operational readiness of complex systems based on probability theory is discussed. Operational readiness of systems is defined and mathematical relationships involved in determining readiness are presented. Example of reliability engineering and quality control is included.

B72-10350

MEMORY REDUCTION THROUGH HIGHER LEVEL LANGUAGE HARDWARE

H. Kerner and L. Gellman

Jul. 1972

M-FS-21128

Application of large scale integration in computers to reduce size and manufacturing costs and to produce improvements in logic function is discussed. Use of FORTRAN 4 as computer language for this purpose is described. Effectiveness of method in storing information is illustrated.

B72-10362

COMPUTER PROGRAM FOR NATURAL GAS FLOW THROUGH NOZZLES

R. C. Johnson

Dec. 1972

LEWIS-11534

Subroutines, FORTRAN 4 type, were developed for calculating isentropic natural gas mass flow rate through nozzle. Thermodynamic functions covering compressibility, entropy, enthalpy, and specific heat are included.

B72-10405

FORTRAN PROGRAM FOR COMPUTING COORDINATES OF CIRCULAR-ARC, SINGLE AND TANDEM, TURBINE AND COMPRESSOR, BLADE SECTIONS ON A PLANE

W. D. McNally and J. E. Crouse

Dec. 1972

LEWIS-11237

Coordinates for circular arc blade section of aircraft high speed compressor gas turbines were computed using FORTRAN 4 program. Aerodynamic configurations studied include single segment airfoils, airfoils with slots, and multiple segment tandem arranged airfoil.

B72-10410

PROGRAM TO DETERMINE SPACE VEHICLE RESPONSE TO WIND TURBULENCE

H. D. Wilkening (Martin Marietta Corp.)

Dec. 1972

M-FS-21614

Computer program was developed as prelaunch wind monitoring tool for Saturn 5 vehicle. Program accounts for characteristic wind changes including turbulence power spectral density, wind shear, peak wind velocity, altitude, and wind direction using stored variational statistics.

B72-10444

VARIABLE BOUNDARY II HEAT CONDUCTION

J. Gramer (Gen. Dyn./Convair) and R. F. O'Neill (Gen. Dyn./Convair)

Jul. 1972

LEWIS-10679

Computer program for solving both transient and steady-state heat transfer problems is presented. Specific applications of computer program are described. Formulation for individual nodes of solid medium for heat balance is presented. Diffusion equation is solved for all nodes simultaneously at finite increments of time.

B72-10458

SYSTEMS EFFECTIVENESS EVALUATION PROGRAM

H. P. Nicely, Jr. (GE) and W. D. Givens (GE)

Aug. 1972

HQ-10306

Eight integrated computer programs provide needed capability to reduce man-hours needed to perform routine monitoring and assessment of effectiveness, reliability, and maintainability of large electronic equipment systems.

B72-10483

COMPUTER PROGRAM FOR CALCULATING THE TEMPERATURE FIELD OF FACE SEALS

T. E. Russell, G. P. Allen, L. P. Ludwig, and R. L. Johnson

Aug. 1972

LEWIS-11110

FORTRAN 4 program for use on IBM 7094 computer for calculating temperature field of shaft seals is described. Shaft seals are composed of basically axisymmetric bodies. Cylindrical coordinate system is used as basis for analysis. Program is quite general and can be applied to variety of axisymmetric body problems.

B72-10486

COMPENSATOR DESIGN FOR LOW-SENSITIVITY LINEAR TIME-INVARIANT SYSTEMS (COMPDES)

L. Willner (Rensselaer Polytech. Inst.)

Aug. 1972

M-FS-21652

09 COMPUTER PROGRAMS

Digital computer program written in FORTRAN 4 has capability of synthesizing low order compensators to stabilize dynamical system in presence of parameter variations. Design scheme is accomplished by means of sensitivity function which is minimized with respect to eigenvalues.

B72-10504 GEOMETRICALLY NONLINEAR STATIC AND DYNAMIC ANALYSIS OF ARBITRARILY LOADED SHELLS OF REVOLUTION

R. G. Ball (Naval Postgraduate School)

Aug. 1972

LANGLEY-11109

Computer program on axisymmetric response of shells with other meridional geometries and response of shells subjected to asymmetric loads is described. Description of theory, method of solution, instructions for preparing input data, and two sample problems to illustrate data preparation and output format are included.

B72-10568 HIGH SPEED SEQUENTIAL DECODER

K. S. Gilhousen (Linkabit Corp.)

Sep. 1972

ARC-10657

Operation of sequential decoding of data at high rates using Fano algorithm is discussed. Actions followed by decoder in systematically searching branches are described. Technique of diagonal steps is explained and illustrated.

B72-10577 ANALYSIS AND COMPUTER PROGRAMS TO CALCULATE ACOUSTIC WAVE PROPERTIES OF BAFFLED CHAMBERS C. L. Oberg (N. Am. Rockwell Corp.), T. L. Wong (N. Am. Rockwell Corp.), and R. A. Schmeltzer (N. Am. Rockwell Corp.)

Sep. 1972

LEWIS-11529

Analytical methods and four computer programs have been developed for calculating wave motion in closed, baffled chambers with rigid and non-rigid boundaries. Application of these methods to design of injector-face baffles in liquid propellant engines will provide significant insight into effects of baffles on combustion stability.

B72-10582 COMPUTER METHOD FOR IDENTIFICATION OF BOILER TRANSFER FUNCTIONS

J. H. Miles

Sep. 1972 See also NASA-TM-X-2436

LEWIS-11808

Iterative computer aided procedure was developed which provides for identification of boiler transfer functions using frequency response data. Method uses frequency response data to obtain satisfactory transfer function for both high and low vapor exit quality data.

B72-10584 COMPUTER PROGRAMS FOR THE DESIGN OF LIQUID-TO-LIQUID JET PUMPS

N. L. Sanger

Dec. 1972

LEWIS-11679

Computer programs based on one-dimensional equations for cavitating and noncavitating flow in liquid-to-liquid jet pumps are described.

B72-10585 COMPUTER PROGRAM FOR FITTING LOW-ORDER POLYNOMIAL SPLINES BY METHOD OF LEAST SQUARES

P. J. Smith

Sep. 1972

LEWIS-11651

FITLOS is computer program which implements new curve fitting technique. Main program reads input data, calls appropriate subroutines for curve fitting, calculates statistical analysis, and writes output data. Method was devised as result of need to suppress noise in calibration of multiplier phototube capacitors.

B72-10586

COMPUTER PROGRAM FOR QUASI-THREE-DIMENSIONAL CALCULATION OF SURFACE VELOCITIES AND CHOKING FLOW FOR TURBOMACHINE BLADE ROWS

T. Katsanis

Sep. 1972 See also NASA-TM-X-1394: NASA-TN-D-6177

LEWIS-11635

Computer program, CHANEL, can obtain quasi-three-dimensional solutions in any well-guided channel. Conditions that can be handled by program that could not be handled previously are nonuniform inlet temperature, pressure, prewhirl, nonaxial flow where meridional flow angle, meridional stream-line curvature, and radius can vary as desired from hub to tip.

B72-10589

REDUNDANT DATA MANAGEMENT SYSTEM

J. R. Hall (McDonnell-Douglas Corp.)

Sep. 1972

M-FS-21831

Redundant data management system solves problem of operating redundant equipment in real time environment where failures are detected, isolated, and switched in simple manner. System consists of quadruply-redundant computer, input/output control units, and data bases. System inherently contains failure detection, isolation, and switching function.

B72-10599

SYSTEM/360 COMPUTER ASSISTED NETWORK SCHEDULING (CANS) SYSTEM

A. C. Brewer (IBM)

Oct. 1972

GSFC-10909

Computer assisted scheduling techniques that produce conflict-free and efficient schedules have been developed and implemented to meet needs of the Manned Space Flight Network. CANS system provides effective management of resources in complex scheduling environment. System is automated resource scheduling, controlling, planning, information storage and retrieval tool.

B72-10600

SIGNIFICANCE ARITHMETIC EXPERIMENTAL PACKAGE (SIGPAC)

I. Cole (Computation Planning, Inc.)

Oct. 1972

GSFC-11499

Method for use by computing facility to determine accuracy of computer calculations is presented. Primary goals of error analysis program are described. Program is designed for both FORTRAN 4 and ASSEMBLER for use with IBM 360 computer.

B72-10601

STUDY OF HIGH ALTITUDE PLUME IMPINGEMENT

C. J. Wojciechowski (Lockheed Missiles and Space Co.), M. M. Penny (Lockheed Missiles and Space Co.), R. J. Prozan (Lockheed Missiles and Space Co.), D. Seymour (Lockheed Missiles and Space Co.), and T. F. Greenwood (Lockheed Missiles and Space Co.)

Oct. 1972

M-FS-21414

Computer program has been developed as analytical tool to predict severity of effects of exhaust of rocket engines on adjacent spacecraft surfaces. Program computes forces, moments, pressures, and heating rates on surfaces immersed in or subjected to exhaust plume environments. Predictions will be useful in design of systems where such problems are anticipated.

B72-10602

PROGRAM FOR STANDARD STATISTICAL DISTRIBUTIONS

L. W. Falls

Oct. 1972

M-FS-21466

Development of procedure to describe frequency distributions involved in statistical theory is discussed. Representation of frequency distributions by first order differential equation is

presented. Classification of various types of distributions based on Pearson parameters is analyzed.

B72-10604
INTERPLANETARY TRAJECTORIES, ENCKE METHOD (ITEM)

F. H. Whitlock, H. Wolfe (Anal. Mech. Associates, Inc.), L. Lefton (Anal. Mech. Associates, Inc.), and N. Levine (Anal. Mech. Associates, Inc.)

Oct. 1972

GSFC-11576

Modified program has been developed using improved variation of Encke method which avoids accumulation of round-off errors and avoids numerical ambiguities arising from near-circular orbits of low inclination. Variety of interplanetary trajectory problems can be computed with maximum accuracy and efficiency.

B72-10605
PROPULSION SIZING PROGRAM

T. A. Kaemming (McDonnell-Douglas Corp.) and A. E. Burns (McDonnell-Douglas Corp.)

Oct. 1972

MSC-14016

Computer program was written to evaluate and define optimum design parameters of low pressure auxiliary propulsion system. APS will provide attitude and translational control of space shuttle vehicles. Program evaluates subsystem design parameters such as engine chamber pressure, mixture ratio, expansion ratio, and subsystem component weight and size.

B72-10606
PROGRAM TO PRODUCE HORIZONTAL STEREOGRAPHIC PRINT MAPS FROM NIMBUS HRIR DATA

H. W. Powell (Programming Methods, Inc.)

Oct. 1972

GSFC-11397

Computer program is written to display Nimbus high resolution infrared radiometer data in optimum form for experiment usage. Program produces three maps for Nimbus experimental data. Functions of program are to process data and prepare print maps from modified temperature measurements.

B72-10607
AUTOMATIC COMPUTER SUBPROGRAM SELECTION FROM APPLICATION-PROGRAM LIBRARIES - ALTLIB

J. M. Drozdowski

Oct. 1972

LANGLEY-11124

General purpose computer program for access and use of alternate library file with minimum programming effort by user is described. Manner in which program is implemented after determining external requirements is analyzed. Program was developed for use with CDC-6400 computer.

B72-10608
TWO AUTOWIRE VERSIONS FOR CDC-3200 AND IBM-360

J. B. Billingsley

Oct. 1972

GSFC-11526; GSFC-11539

Microelectronics program was initiated to evaluate circuitry, packaging methods, and fabrication approaches necessary to produce completely procured logic system. Two autowire programs were developed for CDC-3200 and IBM-360 computers for use in designing logic systems.

B72-10610
COMPUTER PROGRAM ANALYZES AND MONITORS ELECTRICAL POWER SYSTEMS (POSIMO)

K. Jaeger (Ges. fuer Weltraumforsch., Bonn)

Oct. 1972

GSFC-11505

Requirements to monitor and/or simulate electric power distribution, power balance, and charge budget are discussed. Computer program to analyze power system and generate set

of characteristic power system data is described. Application to status indicators to denote different exclusive conditions is presented.

B72-10614
SPECTRAL ANALYSIS OF MULTIPLE TIME SERIES

M. R. Dubman (N. Am. Rockwell Corp.)

Oct. 1972

M-FS-18859

Application of spectral analysis for mathematically determining relationship of random vibrations in structures and concurrent events in electric circuits, physiology, economics, and seismograms is discussed. Computer program for performing spectral analysis of multiple time series is described.

B72-10618
VORTEX-LATTICE FORTRAN PROGRAM FOR ESTIMATING SUBSONIC AERODYNAMIC CHARACTERISTICS OF COMPLEX PLANFORMS

R. J. Margason and J. E. Lamar

Oct. 1972

LANGLEY-11047

Computer program for estimating subsonic aerodynamic characteristics of various aerodynamic configurations is presented. Program represents lifting planforms with vortex-lattice. Specific aerodynamic characteristics to be determined are described. Examples and typical running times of various types of configurations are provided.

B72-10619
SOURCE DECK COMPRESSION AND UPDATE PROGRAM (CAPS)

E. O. Merrill (Programming Methods, Inc.)

Oct. 1972

GSFC-11545

Computer program for compressing program source decks and other data coded in Hollerith format is described. Compression of card image record by substitution of special code characters is discussed. Program is written for IBM 360/75/95 Release 19 computer.

B72-10620
GPEDIT

J. B. Dash (Computer Appl., Inc.)

Dec. 1972

GSFC-11308

GPEDIT compares each character in data record to corresponding character in mask provided by user. Mask indicates that alphabetic or numeric character is allowed or that blank or punctuation mark is anticipated. Mask can also indicate that any data character other than some invalid character is allowed.

B72-10621
WATER IMPACT LOADS

D. H. Sanders (McDonnell-Douglas Corp.) and S. G. Safronski (McDonnell-Douglas Corp.)

Oct. 1972

M-FS-21955

Computer program to generate time history of load factor and pressure on conical body of revolution during impact with water is discussed. Program calculates depth of penetration, velocity, force, load factor, maximum pressure at water line, and average pressure. Program is written in FORTRAN 4 Level H for IBM 360/85/195 Release 20.1 computer.

B72-10622
METHOD FOR NONLINEAR EXPONENTIAL REGRESSION ANALYSIS

B. G. Junkin

Oct. 1972

M-FS-21965

Two computer programs developed according to two general types of exponential models for conducting nonlinear exponential regression analysis are described. Least squares procedure is used in which the nonlinear problem is linearized by expanding

09 COMPUTER PROGRAMS

in a Taylor series. Program is written in FORTRAN 5 for the Univac 1108 computer.

B72-10623

FORTRAN MANPOWER ACCOUNT PROGRAM

J. N. Strand

Oct. 1972

NPO-11973

Computer program for determining manpower costs for full time, part time, and contractor personnel is discussed. Twelve different tables resulting from computer output are described. Program is written in FORTRAN 4 for IBM 360/65 computer.

B72-10624

COMPUTER PROGRAM TO GENERATE ATTITUDE ERROR EQUATIONS FOR A GIMBALLED PLATFORM

W. A. Hall, Jr. (IBM), T. D. Morris (IBM), and K. Y. Rone (IBM)

Oct. 1972

M-FS-21991

Computer program for solving attitude error equations related to gimballed platform is described. Program generates matrix elements of attitude error equations when initial matrices and trigonometric identities have been defined. Program is written for IBM 360 computer.

B72-10625

PROGRAM TO REDUCE THE SIZE OF STRUCTURAL MATRICES

H. W. Spurlin (N. Am. Rockwell Corp.) and R. Heckenlaible (N. Am. Rockwell Corp.)

Dec. 1972

MSC-17619

Computer program was developed to reduce both mass and stiffness matrices by eliminating degrees of freedom using Cholesky decomposition. Program is written in FORTRAN G or H for IBM 360 computer.

B72-10634

COMPUTER PROGRAM FOR AFTERHEAT TEMPERATURE DISTRIBUTION FOR MOBILE NUCLEAR POWER PLANT

W. G. Parker (Westinghouse) and L. E. VanBibber (Westinghouse)

Dec. 1972

LEWIS-11693

ESATA computer program was developed to analyze thermal safety aspects of post-impacted mobile nuclear power plants. Program is written in FORTRAN 4 and designed for IBM 7094/7044 direct coupled system.

B72-10648

VIBRATIONAL TRANSFER FUNCTIONS FOR COMPLEX STRUCTURES

P. A. Jones (Martin Marietta Corp.) and R. L. Berry (Martin Marietta Corp.)

Oct. 1972

M-FS-20744

Evaluation of effects of vibrational multiple frequency forcing functions is discussed. Computer program for developing vibrational transfer functions is described. Possible applications of computer program are enumerated.

B72-10650

PROGRAM FOR CREATING AN OPERATING SYSTEM GENERATION CROSS REFERENCE INDEX (SGINDEX)

C. W. Barth

Oct. 1972

GSFC-11612

Computer program to collect key data from Stage Two input of OS/360 system and to prepare formatted listing of index entries collected is discussed. Program eliminates manual paging through system output by providing comprehensive cross reference

B72-10656

ANALYTIC PROCEDURES FOR DETERMINING DIMENSIONAL REDUNDANCIES IN ELECTRONIC DEVICES

G. J. Herskowitz (Stevens Inst. of Tech.)

Oct. 1972

HQ-10709

Methods for ascertaining dimensional redundancies in mathematical functions related to electronic phenomena and for removal of redundancies are presented. Two computer programs, one to determine a complete B-matrix and the other to optimize the matrix, are discussed. Three subroutines are analyzed.

B72-10667

NUMERICAL SOLUTION OF POTENTIAL FLOW PROBLEMS IN TERMS OF FLUX COMPONENTS

D. U. VonRosenberg (Tulane Univ.)

Dec. 1972

M-FS-21751

Numerical determination of flux components in vapor flow considers split boundary conditions in both directions to form grid lines for flow continuity equations. Matrix of coefficients obtains direct solution for potential flow problem without iteration.

B72-10671

A LINEAR PROGRAMMING MANUAL

R. C. Tuey (Informatics TISCO, Inc.)

Dec. 1972

HQ-10743

Computer solutions of linear programming problems are outlined. Information covers vector spaces, convex sets, and matrix algebra elements for solving simultaneous linear equations. Dual problems, reduced cost analysis, ranges, and error analysis are illustrated.

B72-10674

GEOMETRIC FIELD-LINE CALCULATIONS

E. G. Stassinopoulos and G. D. Mead

Oct. 1972

GSFC-11597

Procedure for calculating three components of vector field from spherical harmonic using either geocentric or geodetic coordinates as input and output is described. Three subroutines of computer program are explained. Program is written in FORTRAN for IBM 360 computer.

B72-10675

MATHEMATICAL ANALYSIS FOR THE PERFORMANCE ASSESSMENT OF SPACE COMMUNICATION PARAMETERS, IBM-360 VERSION

L. Grayson (Computer Sci. Corp.)

Dec. 1972

GSFC-11523

Development of equations to determine communication capability of pulse or digital transmission link is discussed. Equation specifies probability detection error for one-way transmission. Analysis is conducted on IBM 360 computer using FORTRAN 4.

B72-10676

INTEGRATED MULTI-PATH PROGRAM ANALYSIS AND COST TECHNIQUE (IMPACT)

O. Sullivan

Dec. 1972

M-FS-21880

SDS-930 computer determines impact cost-decision value at any chronological point in definition phase of multiprogram project. Options, option combinations, and different displays are listed. Graphical procedure was chosen as best method for project.

B72-10718

COMPUTER PROGRAM FOR CALCULATION OF COMPLEX CHEMICAL EQUILIBRIUM COMPOSITIONS

S. Gordon and B. J. McBride

Dec. 1972

LEWIS-11714; LEWIS-11740

Computer program is described for numerical solution of chemical equilibria in complex systems by using nonlinear algebraic equations. Free-energy minimization technique is used.

B72-10721

CHRYSLER IMPROVED NUMERICAL DIFFERENCING ANALYZER FOR THIRD GENERATION COMPUTERS CINDA-3G

J. D. Gaski (Chrysler Corp.), D. R. Lewis (Chrysler Corp.), and L. R. Thompson (Chrysler Corp.)

Dec. 1972 See also B67-10278

MSC-11653

New and versatile method has been developed to supplement or replace use of original CINDA thermal analyzer program in order to take advantage of improved systems software and machine speeds of third generation computers. CINDA-3G program options offer variety of methods for solution of thermal analog models presented in network format.

B72-10726

OPTIMIZING DESIGNS OF TWO-LEVEL FACTORIAL EXPERIMENTS GIVEN PARTIAL PRIOR INFORMATION (NAMER)

S. M. Sidik

Dec. 1972

LEWIS-11708

NAMER is used to find Bayes procedure for designing two level, fractional factorial experiments when given partial prior information. Program is written in FORTRAN 4 for IBM 7094 computer.

B72-10736

SINDA, SYSTEMS IMPROVED NUMERICAL DIFFERENCING ANALYZER

L. C. Fink (TRW Systems Group), H. M. -Y. Pan (TRW Systems Group), and T. Ishimoto (TRW Systems Group)

Dec. 1972

MSC-13805

Computer program has been written to analyze group of 100-node areas and then provide for summation of any number of 100-node areas to obtain temperature profile. SINDA program options offer user variety of methods for solution of thermal analog modes presented in network format.

B72-10739

AEROTHERM CHEMICAL EQUILIBRIUM (ACE) COMPUTER PROGRAM

C. A. Powars (Aerotherm Corp.) and R. M. Kendall (Aerotherm Corp.)

Dec. 1972

LEWIS-11722

Computer code was developed for calculating chemical quantities and qualities in equilibrium.

B72-10747

THREE BIT MASS SPECTRAL SEARCH PROGRAM

S. L. Grotch

Dec. 1972

NPO-11960

Computer program is developed to interpret spectral data in order to assist chemist in identifying low resolution mass spectra. Two versions of program, using approximately same amount of core, are available. In both programs, core requirements are roughly proportional to maximum number of unknowns to be handled on each pass through tape.

B72-10750

FORTRAN READ PACKAGE

D. P. Diekelman (McDonnell-Douglas Corp.)

Dec. 1972

MSC-14161

Flexible input schemes for digital programs are described. No card format or special order of cards is required. Read package is controlled by small set of parameters which can be changed to account for differences in computers and digital programs.

B72-10753

FORTRAN PROGRAM FOR GENERATING A TWO-DIMENSIONAL ORTHOGONAL MESH BETWEEN TWO ARBITRARY BOUNDARIES

W. D. McNally

Dec. 1972

LEWIS-11863

Computer program is described which computes and plots coordinates for two-dimensional orthogonal mesh for channel containing solid body, about which flow passes and which spans channel from one wall to the other.

B73-10012

N-BODY U AND K MATRIX PROGRAM

R. N. Setter (Gen. Dynamics Corp.), L. Ojeda (Gen. Dynamics Corp.) and R. F. Hoeft (Gen. Dynamics Corp.)

Mar. 1973

LEWIS-11438

Computer program was devised to compute free-fall trajectories of satellites, allowing for injection errors and midcourse velocity perturbations. Program consists of trajectory perturbing program and N-body integrating conic program which can also be used as 2-body patch conic program.

B73-10049

A COMPREHENSIVE PROGRAM FOR TEXTUAL CONCORDANCES AND STATISTICS

L. A. Ule (Rockwell Intern. Corp.)

Mar. 1973

JSC-17484

Literary research tool can provide concordance and many other textual statistics relating to authorship or sequence of composition. Mechanical text manipulation provides wide variety of text formats and conventions (such as upper case). This program is written in FORTRAN H for use on IBM-360 computer.

B73-10053

AUTOMATED DATA MANAGEMENT INFORMATION SYSTEM

C. Blackstone, D. Dunn, E. Sullivan, J. Whitlock (GE), D. Buehler (GE), L. Pratt, T. Hoffditz (Federal Elec. Corp.), J. Rose (Federal Elec. Corp.), M. Smithson (Federal Elec. Corp.), and J. Feeley (Federal Elec. Corp.)

Mar. 1974

KSC-10619

ADMIS stores and controls data and documents associated with manned space flight effort. System contains all data oriented toward a specific document; it is primary source of reports generated by the system. Each group of records is composed of one document record, one distribution record for each recipient of the document, and one summary record.

B73-10064

COMPUTER PROGRAM FOR TRANSIENT RESPONSE OF STRUCTURAL RINGS SUBJECTED TO FRAGMENT IMPACT

R. W. -H. Wu (MIT) and E. A. Witmer (MIT)

May 1973

LEWIS-11926

Mathematical optimization of containment/deflection system would save time, effort, and material as well as afford designer greater opportunity to investigate new ideas and variety of materials.

B73-10065

AEROTHERM CHARRING MATERIALS ABLATION COMPUTER PROGRAM

C. A. Powars (Acurex Corp.) and R. M. Kendal (Acurex Corp.)

May 1973

LEWIS-11854

Ablating-surface boundary conditions involve considerations of surface thermochemistry. Several programs may be used to provide surface thermochemistry information.

B73-10066

COMPUTER PROGRAM FOR PRELIMINARY DESIGN ANALYSIS OF AXIAL-FLOW TURBINES

A. J. Glassman

Feb. 1973

LEWIS-11815

Computations are based on mean-diameter flow properties. For any given turbine, all stages, except the first, are specified

09 COMPUTER PROGRAMS

to have same shape velocity diagram. First stage inlet flow is axial.

B73-10067

A METHOD FOR ECONOMIC EVALUATION OF REDUNDANCY LEVELS FOR AEROSPACE SYSTEMS

P. W. Hodge (Grumman Aerospace Corp.) and B. Frumkin (Grumman Aerospace Corp.)

Feb. 1973 See also NASA-CR-128494

KSC-10754

Principle comprises primary cost impacts, such as operational delays, reflight missions due to aborts, procurement of equipment, and vehicle expansion to accommodate additional equipment. Economics are estimated by criterion which is relatively insensitive to impertinent cost factors.

B73-10073

MEDICAL INFORMATION MANAGEMENT SYSTEM (MIMS): AN AUTOMATED HOSPITAL INFORMATION SYSTEM

S. Alterescu, R. A. Schwarz (Federal City Coll.), and L. S. Collins (Federal City Coll.)

Mar. 1973

GSFC-11540

Flexible system of computer programs allows manipulation and retrieval of data related to patient care. System is written in version of FORTRAN developed for CDC-6600 computer.

B73-10083

BINARY CONCATENATED CODING SYSTEM

L. G. Monford, Jr.

Mar. 1973

JSC-14082

Coding, using 3-bit binary words, is applicable to any measurement having integer scale up to 100. System using 6-bit data words can be expanded to read from 1 to 10,000, and 9-bit data words can increase range to 1,000,000. Code may be "read" directly by observation after memorizing simple listing of 9's and 10's.

B73-10087

PPUAS--PHOTOPEAK UNFOLDING AND SELF-SHIELDING PROGRAM

M. Taherzadeh

Mar. 1973

NPO-13188

Computer code was developed to determine radioactive emission rates of nuclear fuels. Code is basically written for two different source geometries; however, unfolding routine can be executed for other source geometries.

B73-10088

A GENERAL PURPOSE MANEUVER TURNS COMPUTER PROGRAM

G. I. Jaivin

Mar. 1973

NPO-13213

Program computes turns required to point given spacecraft-fixed vector in direction of given inertially-fixed vector. Program was written in FORTRAN V language for Univac-1108 computer.

B73-10091

A LINEAR CIRCUIT ANALYSIS PROGRAM WITH STIFF SYSTEMS CAPABILITY

C. H. Cook (Old Dominion Univ.) and S. J. Bavuso

Feb. 1973

LANGLEY-11184

Several existing network analysis programs have been modified and combined to employ a variable topological approach to circuit translation. Efficient numerical integration techniques are used for transient analysis.

B73-10101

A GENERALIZED APPROACH TO COMPUTER SYNTHESIS OF DIGITAL HOLOGRAMS

W. A. Hopper (Sperry Rand Corp.)

Feb. 1973

M-FS-21973

Hologram is constructed by taking number of digitized sample points and blending them together to form "continuous" picture. New system selects better set of sample points resulting in improved hologram from same amount of information.

B73-10104

A SUMMARY REPORT ON SYSTEM EFFECTIVENESS AND OPTIMIZATION STUDY

O. L. Williamson (Federal Elec. Corp.), A. J. Rydberg (Federal Elec. Corp.), and G. Dorris (Federal Elec. Corp.)

Mar. 1973

M-FS-22126

Report treats optimization and effectiveness separately. Report illustrates example of dynamic programming solution to system optimization. Computer algorithm has been developed to solve effectiveness problem and is included in report.

B73-10114

EIGENVALUE ROUTINE BY STURM SEQUENCE METHOD

K. K. Gupta

Mar. 1973

NPO-11805

Computer program has been generated for efficient solution of certain broad classes of eigenvalue problems. Procedure fully exploits banded nature of associated matrices and further enables user to compute either all roots or any specific ones desired. Special storage options enable storing only nonzero elements of associated main matrix of eigenvalue problem.

B73-10115

AUTOMATED SHELL THEORY FOR ROTATING STRUCTURES (ASTROS)

B. J. Foster (Teledyne Brown Engineering) and J. M. Thomas (Teledyne Brown Engineering)

Mar. 1973

M-FS-21970

Computer program can be used to analyze any disk or shell of revolution of arbitrary cross section under inertial loads caused by rotation about shell axis and under various static loads, including thermal gradients. Geometric shapes incorporated in program are ellipsoidal, spherical, ogival, toroidal, conical, circular plate, cylindrical, and parabolic.

B73-10120

ASCENT CONTROL ANALYSIS FOR S-II DERIVATIVE LAUNCH VEHICLES, DIGITAL COMPUTER PROGRAM

P. D. Andrews (Rockwell Intern. Corp.)

May 1973

M-FS-24324

Model is used for analysis of the six degrees-of-freedom dynamics of general launch vehicle during atmospheric boost. Equations of motion are developed for rigid body and flat earth. Case may be started at any time beginning with ignition of stage and may be ended upon, or prior to, stage burnout. End of case may be at a specified time or based on propellant expended.

B73-10162

GREMEX UPDATE (GODDARD RESEARCH ENGINEERING MANAGEMENT EXERCISE)

M. J. Vaccaro and M. F. Denault

Jun. 1973

GSFC-11512; GSFC-11515

Management simulation techniques offer training in management problems. Exercise was developed to provide experience in research and development project decision making from management rather than technological perspective. Program and documentation have been revised innumerable times in past. Described report is revised version as it exists to date.

B73-10165

THEORY AND CALCULUS OF CUBICAL COMPLEXES

M. Perlman

Jun. 1973

NPO-11491

Combination switching networks with multiple outputs may be represented by Boolean functions. Report has been prepared which describes derivation and use of extraction algorithm that may be adapted to simplification of such simultaneous Boolean functions.

B73-10166
AN IMPROVED HOLOGRAPHIC RECORDING MEDIUM

R. A. Gange (RCA)
 Jun. 1973 See also B73-10155

M-FS-22532

Solid, linear chain hydrocarbons with molecular weight ranging from about 300 to 2000 can serve as long-lived recording medium in optical memory system. Suitable recording hydrocarbons include microcrystalline waxes and low molecular weight polymers or ethylene.

B73-10186
PRESSURE DROP AND PUMPING POWER FOR FLUID FLOW THROUGH ROUND TUBES

D. Jelinek (Rockwell Intern. Corp.)

Jun. 1973

M-FS-24172

Program, written for Hewlett-Packard 9100A electronic desk computer provides convenient and immediate solution to problem of calculating pressure drop and fluid pumping power for flow through round tubes. Program was designed specifically for steady-state analysis and assumes laminar flow.

B73-10214
COMPUTER PROGRAM FOR THE DESIGN OF TOROIDAL TRANSFORMERS

J. A. Dayton, Jr.

Nov. 1973

LEWIS-11878

Program relieves designer of most of the computational details, while he maintains control over most of engineering decisions. Number of specifications that must be supplied by user allows for considerable flexibility and for exercise of engineering judgment. Speed of program makes it possible to run many cases, economically determining effect of various parameter changes.

B73-10218
A FAULT-TOLERANT CLOCK

W. P. Daley (MIT) and J. F. McKenna, Jr. (MIT)

Aug. 1973

JSC-12531

Computers must operate correctly even though one or more off components have failed. Electronic clock has been designed to be insensitive to occurrence of faults; it is substantial advance over any known clock.

B73-10219
VALIDITY TEST FOR LINEAR ERROR ANALYSIS

L. S. Diamant (TRW, Inc.)

Aug. 1973

JSC-14378

To determine whether estimation process simulated by linear error analysis will converge, criterion has been developed based on extension of classical observability. Particular application of technique is with groups of batched navigation data where statistics of estimation errors are derived with classical minimum-variance methods.

B73-10227
SPECTRAL ANALYSIS PROGRAM (SAP)

D. M. Detchmendi (TRW, Inc.) and W. L. Hayden (TRW, Inc.)

Aug. 1973

JSC-14310

Program eliminates or reduces time-consuming aspects of computation of power spectrum for high-frequency communication system. This program was written in FORTRAN IV for UNIVAC 1230 or 1108 computer.

B73-10231
COMPUTER PROGRAM FOR CALCULATION OF THERMODYNAMIC AND TRANSPORT PROPERTIES OF COMPLEX CHEMICAL SYSTEMS

R. A. Svehla and B. J. McBride

Nov. 1973

LEWIS-11997

Program performs calculations such as chemical equilibrium for assigned thermodynamic states, theoretical rocket performance for both equilibrium and frozen compositions during expansion, incident and reflected shock properties, and Chapman-Jouget detonation properties. Features include simplicity of input and storage of all thermodynamic and transport property data on master tape.

B73-10232
A COMPUTER PROGRAM FOR CALCULATING DESIGN AND OFF-DESIGN PERFORMANCE FOR TURBOJET AND TURBOFAN ENGINES

R. W. Koenig and L. H. Fishbach

Nov. 1973 See also B73-10245

LEWIS-12010

Program uses component performance maps to enable user to do analytical engine cycle calculations. Through scaling procedure, each of the component maps can be used to represent a family of maps. Either convergent or convergent-divergent nozzles may be used.

B73-10233
COMPUTER PROGRAM TO DETERMINE THE IRRATIONAL-AL NOZZLE ADMITTANCE

W. A. Bell (Georgia Inst. of Tech.) and B. T. Zinn (Georgia Inst. of Tech.)

Nov. 1973

LEWIS-12019

Irrational nozzle admittance is the boundary condition that must be satisfied by combustor flow oscillations at nozzle entrance. Defined as the ratio of axial velocity perturbation to the pressure perturbation at nozzle entrance, nozzle admittance can also be used to determine whether wave motion in nozzle under consideration adds or removes energy from combustor oscillations.

B73-10244
COMPUTER PROGRAM TO DETERMINE ROOTS OF POLYNOMIALS BY RATIO OF SUCCESSIVE DERIVATIVES

J. E. Crouse and C. W. Putt

Nov. 1973

LEWIS-11809

High speed computing finds roots of polynomials with real number coefficients. Ratios of successive polynomial derivatives approach provides accurate roots-of-polynomial computer programs with very high reliability. With derivative ratio method, root analysis can still be done even though the polynomial and its lower order derivatives cannot be evaluated with sufficient accuracy.

B73-10245
A COMPUTER PROGRAM FOR CALCULATING DESIGN AND OFF-DESIGN PERFORMANCE OF TWO- AND THREE-SPOOL TURBOFANS WITH AS MANY AS THREE NOZZLES

L. H. Fishbach and R. W. Koenig

Nov. 1973 See also B73-10232

LEWIS-12011

Program uses component performance maps to enable user to do analytical engine cycle calculations. Either convergent or convergent-divergent nozzles may be used.

B73-10246
COMPUTER PROGRAM FOR COMPRESSIBLE FLOW NETWORK ANALYSIS

M. E. Wilton (GE) and J. P. Murtaugh (GE)

Dec. 1973

LEWIS-11859

Program solves problem of an arbitrarily connected one dimensional compressible flow network with pumping in the channels and momentum balancing at flow junctions. Program

09 COMPUTER PROGRAMS

includes pressure drop calculations for impingement flow and flow through pin fin arrangements, as currently found in many air cooled turbine bucket and vane cooling configurations.

B73-10247 COMPUTER PROGRAM TO COMPUTE BUCKLING LOADS OF SIMPLY SUPPORTED ANISOTROPIC PLATES

C. C. Chamis

Dec. 1973

LEWIS-11961

Program handles several types of composites and several load conditions for each plate, both compressive or tensile membrane loads, and bending-stretching coupling via the concept of reduced bending rigidities. Vibration frequencies of homogeneous or layered anisotropic plates can be calculated by slightly modifying the program.

B73-10248 COMPUTER PROGRAM CALCULATES QUASI-ONE- DIMENSIONAL FLOW ACROSS FACE SEALS AND NARROW SLOTS

J. Zuk and P. J. Smith

Dec. 1973 See also B72-10114

LEWIS-11996

Program calculates mass and volume leakage across seal; mean friction factor; force; center of pressure; and distributions of pressure, temperature, density, friction parameter, velocity, and Mach number across seal for both laminar flow and turbulent flow regimes and for choked and subsonic flow.

B73-10256 A NEW ALGORITHM FOR FINDING SURVIVAL COEF- FICIENTS EMPLOYED IN RELIABILITY EQUATIONS

W. G. Bouricus (IBM) and B. J. Flehinger (IBM)

Aug. 1973

M-FS-22295

Product reliabilities are predicted from past failure rates and reasonable estimate of future failure rates. Algorithm is used to calculate probability that product will function correctly. Algorithm sums the probabilities of each survival pattern and number of permutations for that pattern, over all possible ways in which product can survive.

B73-10263 COMPUTER PROGRAM FOR PREDICTING SYMMETRIC JET MIXING OF COMPRESSIBLE FLOW IN JETS

G. B. Gilbert (Dynatech Corp.) and P. G. Hill (Queens Univ.)

Jun. 1973 See also NASA-CR-2251

ARC-10730

Finite-difference computer program has been developed for treating mixing of two parallel and compressible air streams; one of them may be supersonic. This development is restricted to symmetric jet mixing in which high-speed jet is located on axis of channel and no provision is made for blowing or suction along channel walls.

B73-10266 DIGITAL RANDOM-NUMBER GENERATOR

D. H. Brocker

Jul. 1973

ARC-10096

For binary digit array of N bits, use N noise sources to feed N nonlinear operators; each flip-flop in digit array is set by nonlinear operator to reflect whether amplitude of generator which feeds it is above or below mean value of generated noise. Fixed-point uniform distribution random number generation method can also be used to generate random numbers with other than uniform distribution.

B73-10274 MINIMUM SWITCHING NETWORK FOR GENERATING THE WEIGHT OF A BINARY VECTOR

T. O. Anderson

Jun. 1973

NPO-11590

Vector is divided into three variable sections, and each section is processed by unary-to-binary decoder or adder. Resulting

network performs on iterative collection process; all outputs of same kind are collected in same manner. In combination with simple comparator gates, weighting network can also be used as majority network.

B73-10296 NODE-RECORDING METHOD FOR STIFFNESS MATRIX WAVEFRONT REDUCTION IN STRUCTURAL ANALYSIS

R. Levy

Jul. 1973

NPO-11620

Method provides approach to automatic node relabeling that is consistent with requirements of wavefront concept. Specific applications are in analysis of aircraft, building structures, radar and surveillance structures, bridges, etc., or any other structure that is studied with aid of large and complex analytical model. Minimum growth sequencing is effective, rapid, and capable of producing economies.

B73-10300 HYBRID COORDINATE FORMULATION USED FOR THE DESIGN OF ATTITUDE CONTROL SYSTEMS FOR FLEXIBLE SPACECRAFT

P. W. Likins (UCLA) and E. E. Fleisher

Jul. 1973

NPO-11714

Formulation combines certain advantages of discrete and distributed coordinates by using both simultaneously. In report summarizing method, theoretical development is extended as necessary for applications of practical interest. Explicit analyses are presented in sufficient detail to establish utility in flexible space vehicle control system of hybrid coordinate formulation.

B73-10301 STRUCTURAL ANALYSIS OF VISCOELASTIC MATERIALS UNDER THERMAL AND PRESSURE LOADING

J. C. Chen

Jul. 1973

NPO-11727

Technique computes stresses resulting from axisymmetric transient thermal loading in circular solid-propellant grain section with circular ports. Propellant is assumed to be linear, thermal rheologically simple, viscoelastic material; material properties are represented by exponential series in time.

B73-10302 ANALYSIS OF NONLINEAR VIBRATIONS OF CYLINDERS

J. C. Chen

Jul. 1973 See also JPL-SPS-37-62-VOL-3; JPL-SPS-37-64-VOL-3

NPO-11736

In study of geometric nonlinear vibrations, infinite, long, thin-walled cylinder was analyzed under periodic, dynamic loading to demonstrate that some nonlinear phenomena cannot be obtained by straight-forward numerical solution methods. Results demonstrate that nonlinear phenomenon in large amplitude vibration traveling-wave condition can be predicted by analysis.

B73-10303 USE OF MULTIVARIABLE ASYMPTOTIC EXPANSIONS IN A SATELLITE THEORY

S. S. Dallas

Jul. 1973

NPO-11750

Initial conditions and perturbative force of satellite are restricted to yield motion of equatorial satellite about oblate body. In this manner, exact analytic solution exists and can be used as standard of comparison in numerical accuracy comparisons. Detailed numerical accuracy studies of uniformly valid asymptotic expansions were made.

B73-10307 COMPUTER PROGRAM FOR THE PREDICTION OF REORIENTATION FLOW DYNAMICS

W. S. Betts, Jr. (Gen. Dynamics Corp.)

Dec. 1973

LEWIS-11816

Program uses Navier-Stokes and continuity equations for incompressible, viscous fluid as the basic equations governing reorientation flow dynamics. Program can simulate curved as well as straight-walled boundaries; has ability to calculate both free-surface and confined flows; and can be used in either cylindrical or plane geometry.

B73-10309**PROGRAM FOR CALCULATING TOTAL-EFFICIENCY OF SPECIFIC-SPEED CHARACTERISTICS OF CENTRIFUGAL COMPRESSORS**

M. R. Galvas (Army Air Mobility R. & D. Lab.)

Dec. 1973

LEWIS-12008

Program uses one-dimensional mean streamline analysis conducted at fixed stagnation conditions. Seven specific losses are calculated for each set of compressors geometric variables and inlet velocity diagram characteristics studied. Categories used as input information are compressor geometry, thermodynamic properties of working fluid, velocity diagram characteristics, and iteration limits.

B73-10322**CHARACTERISTICS OF FORTRAN**

W. R. Garner (Martin Marietta Corp.)

Oct. 1973

LANGLEY-11177

Publication is announced which outlines source program differences between IBM 360, UNIVAC 1108, CDC 6000, and Honeywell Series 32 computer systems. Publication can be guide to programmer in converting existing program from one computer system to another.

B73-10344**LOW-COST CODING TECHNIQUES FOR DIGITAL FAULT DIAGNOSIS**

A. Avizienis

Aug. 1973 See also JPL-TR-32-1476

NPO-11701

Published report discusses fault location properties of arithmetic codes. Criterion for effectiveness of given code is detection probability of local fault by application of checking algorithm to results of entire set of algorithms of processor. Report also presents analysis of arithmetic codes with low-cost check algorithm which possesses partial fault-location properties.

B73-10360**LOGICAL-FUNCTION GENERATOR**

W. E. Sivertson, Jr.

Oct. 1973

XLA-05099

Apparatus and technique for generating logical functions and circuits have been developed. They provide aid in designing and constructing hardware to generate logic circuits, by defining circuit connections required to generate these functions. With this method, it is possible quickly and automatically to design logic, while eliminating involved and time-consuming mathematical manipulations.

B73-10362**COMPUTER PROGRAM TO DETERMINE PRESSURE DISTRIBUTIONS AND FORCES ON BLUNT BODIES OF REVOLUTION**

C. M. Jackson, Jr., W. C. Sawyer, and R. S. Smith

Oct. 1973

LANGLEY-11197

Program was written to include integration of surface pressure in order to obtain axial-force, normal-force, and pitching-moment coefficients. Program was written in CDC FORTRAN for the CDC-6600 computer system.

B73-10363**COMPUTER PROGRAM FOR STRESS, VIBRATION, AND BUCKLING CHARACTERISTICS OF GENERAL SHELLS OF REVOLUTION**

G. A. Cohen (Structures Res. Assoc.) and R. T. Haftka (Structures

Res. Assoc.)

Sep. 1973

LANGLEY-11369

Structures Research Associates (SRA) system of programs is composed of six compatible computer programs for structural analyses of axisymmetric shell structures. Theories and methods upon which these programs are based are presented in documentation. They apply to a common structural model but analyze different modes of structural response.

B73-10384**IMPROVED PROCEDURES FOR MASS MATRIX-REDUCTIONS IN EIGENVALUE SOLUTIONS**

R. Levy

Sep. 1973

NPO-11619

Analytical models of three structures were used to test mass matrix-reduction schemes. Accuracy of four mode shapes and frequencies was tracked through successive mass matrix-reductions with diminishing numbers of indicator degrees of freedom. Results were consistently disappointing. Two new procedures were developed in attempt to improve accuracy.

B73-10418**LOGISTICS HARDWARE AND SERVICES CONTROL SYSTEM**

A. Koromilas (Boeing Co.), K. Miller (Boeing Co.), and T. Lamb (Boeing Co.)

Dec. 1973

KSC-10819

Software system permits onsite direct control of logistics operations, which include spare parts, initial installation, tool control, and repairable parts status and control, through all facets of operations. System integrates logistics actions and controls receipts, issues, loans, repairs, fabrications, and modifications and assets in predicting and allocating logistics parts and services effectively.

B73-10432**MARSHALL SYSTEM FOR AEROSPACE SIMULATION (MARSYAS)**

H. H. Tranboth (Computer Sciences Corp.), A. J. Ventre (Computer Sciences Corp.), W. L. McCollum (Computer Sciences Corp.), T. L. Balentine (Computer Sciences Corp.), and R. Sevigny (Computer Sciences Corp.)

Dec. 1973

M-FS-22672

System is simple flexible language which can be coded by users unfamiliar with computer programming. It is designed for engineers with little experience in simulation, who desire to simulate large physical systems. User has ability to mix differential equations with diagrams in his model. With few exceptions, there is no rigid statement-operator structure within given module.

B73-10443**DYNAMIC NONLINEAR ANALYSIS OF SHELLS OF REVOLUTION (DYNASOR II)**

J. R. Tillerson (Tex. A&M Univ.) and W. E. Haisler (Tex. A&M Univ.)

Feb. 1974 See also B73-10446

JSC-14496

Equations of motion of shell are solved using Houbolt's numerical procedure with nonlinear terms being moved to right-hand side of equilibrium equations and treated as generalized loads. Program was written in FORTRAN IV for IBM 360 or CDC 6000 series computers.

B73-10444**FREQUENCIES AND MODES FOR SHELLS OF REVOLUTION (FAMSOR)**

L. B. McWhorter (Tex. A&M Univ.) and W. E. Haisler (Tex. A&M Univ.)

Feb. 1974 See also B73-10446

JSC-14497

Using stiffness matrix and lumped-mass representation specified number of natural frequencies are obtained using inverse iteration method. Mode shapes for each frequency are also

09 COMPUTER PROGRAMS

obtained. These frequencies and mode shapes can be found in reasonable periods of computer time utilizing this code.

B73-10445

THE STATIC NONLINEAR ANALYSIS OF SHELLS OF REVOLUTION (SNASOR II)

J. A. Stricklin (Tex. A&M Univ.) and W. E. Haisler (Tex. A&M Univ.)

Feb. 1974 See also B73-10446

JSC-14495

Utilizing stiffness matrices and supplying as input the loading and boundary conditions, program generates equilibrium equations for structure. Nonlinear strain energy terms result in pseudogeneralized forces which are combined with applied generalized forces. Resulting set of nonlinear algebraic equilibrium equations is solved by one of several methods.

B73-10446

STIFFNESS AND MASS MATRICES FOR SHELLS OF REVOLUTION (SAMSOR II)

J. R. Tillerson (Tex. A&M Univ.) and W. E. Haisler (Tex. A&M Univ.)

Jan. 1974

JSC-14494

Utilizing element properties, structural stiffness and mass matrices are generated for as many as twenty harmonics and stored on magnetic tape. Matrices generated constitute input data to be used by other stiffness of revolution programs. Variety of boundary and loading conditions can be employed without having to create new mass and stiffness matrices for each case.

B73-10526

STEREOSCOPIC COMPUTER GRAPHICS DISPLAY SYSTEM

H. H. Plott, Jr. (Auburn Univ.) and J. D. Irwin (Auburn Univ.)

Mar. 1974

M-FS-22322

Handbook was published on study which describes relative merits of two general-purpose, stereoscopic display systems. Both systems are adaptable to most small data processing facilities and, with minimal hardware development, greatly enhance user ability to interact with computer and to interpret data output. Section also describes digital-to-analog converters designed for use with system.

B74-10033

DESIGN STANDARDS FOR LOW-PROFILE FLANGES

W. P. Prasthofer

May 1974

M-FS-22708

Analysis of low-profile flange is based on thin shell theory and simple ring theory. Program produces comprehensive design procedure with subsequent stress and deformation analysis. Program was written in FORTRAN IV for UNIVAC 1108 computer.

B74-10034

MODULAR DIGITAL COMPUTER SYSTEM DESIGN

Innovator not given (Hughes Aircraft Corp.) Jul. 1974

M-FS-22935

Automatically-Reconfigurable Modular Multiprocessor System (ARMMS) provides redundant processing with dynamic mode switching in real time. Design will provide higher computer capability than that presently available for same amount of hardware and will furnish modular system which is responsive to diverse problems effectively.

B74-10037

COMPUTER PROGRAM FOR SPACECRAFT-BOOSTER SEPARATION SPRING SELECTION, SET COMPOSITION, AND LOCATION DETERMINATION

Innovator not given (Space Div. of GE) Jul. 1974

GSFC-11616

Program combines all calculation and determination requirements into one comprehensible technique. Program automatically performs selection of separation springs, composition of spring sets, and correct spring location with improved accuracy and reliability.

B74-10040

GRAPHICS SHADOWING ANALYSIS

S. R. Hayes (McDonnell-Douglas Astronautics Co.)

Jul. 1974

M-FS-21406

Visual image is generated on cathode-ray tube screen to scale and is constructed according to dimensions of specified craft. Once displayed, image may be manipulated by several different means.

B74-10043

MARSHALL INFORMATION RETRIEVAL AND DISPLAY SYSTEM (MIRADS)

J. L. Groover (Computer Sci. Corp.), S. C. Jones (Computer Sci. Corp.), and W. L. King (Computer Sci. Corp.)

Jul. 1974

M-FS-22536

Program for data management system allows sophisticated inquiries while utilizing simplified language. Online system is composed of several programs. System is written primarily in COBOL with routines in ASSEMBLER and FORTRAN V.

B74-10044

GENERALIZED CURVE FIT AND PLOTTING (GECAP) PROGRAM

B. D. Beadle, II, B. D. Dolerhie, Jr., J. W. Owen, and R. A. Schlagheck

Jul. 1974

M-FS-22728

Program generates graphs on 8 1/2 by 11 inch paper and is designed to be used by engineers and scientists who are not necessarily professional programmers. It provides fast and efficient method for display of plotted data without having to generate any additional FORTRAN instructions.

B74-10067

COMPUTER PROGRAM FOR PREDICTING OFF-DESIGN PERFORMANCE OF CENTRIFUGAL COMPRESSORS

M. R. Galvas (U. S. Army Air Mobility R and D Lab.)

Aug. 1974

LEWIS-12186

Complete knowledge of compressor overall geometry and working fluid total inlet conditions is required for program's use. On given speed line, compressor performance is calculated for range of inlet velocity levels. Working fluid state conditions and flow properties are calculated using mean stream line one-dimensional analysis.

B74-10084

COMPUTER PROGRAM FOR FLEXIBLE ROTOR DYNAMICS ANALYSIS

F. A. Shen (Rockwell Intern. Corp.)

Aug. 1974

LEWIS-12153

Program analyzes general nonaxisymmetric and nonsynchronous transient and steady-state rotor dynamic performance of bending- and shear-wise flexible rotor-bearing system under various operating conditions. Program can be used as analytical study tool for general transient spin-speed and/or non-axisymmetric rotor motion.

B74-10113

COMPUTATION OF AERODYNAMIC INTERFERENCE BETWEEN LIFTING SURFACES AND LIFT- AND CRUISE-FANS

M. F. E. Dillenius (Nielsen Eng. and Res., Inc.), M. R. Mendenhall (Nielsen Eng. and Res., Inc.), and S. B. Spangler (Nielsen Eng. and Res., Inc.)

Aug. 1974

ARC-10833

Sequence of three computer programs predicts aerodynamic interference on lifting surfaces of transport-type aircraft which are equipped with lift and cruise fans; for example, high-bypass-ratio engine and wing-pylon tail configuration or fuselage-mounted lift-fan and wing-tail configuration.

B74-10123
COMPUTER PROGRAM FOR CALCULATING WATER AND STEAM PROPERTIES

R. C. Hendricks, I. C. Peller, and A. K. Baron
 Nov. 1974

LEWIS-12206

Computer subprogram, WASP, accepts any two of pressure, temperature, and density as input conditions. Pressure and either entropy or enthalpy are also allowable input variables. This flexibility is especially useful in cycle analysis. Metastable calculations can also be made using WASP.

B74-10127
DATA SUMMARY AND COMPUTER PROGRAM FOR AXIAL-FLOW PUMP ROTOR PERFORMANCE

M. J. Miller (Iowa State Univ.), T. H. Okiishi (Iowa State Univ.), G. K. Serovy (Iowa State Univ.), D. M. Sandercock, and W. R. Britsch
 Dec. 1974

LEWIS-11920

Assembly of noncavitating blade element performance data for axial-flow pump rotor configurations has been collected and organized. Program facilitates handling large amounts of experimental data involved and may be used as data reduction program to process flow and performance measurements from other axial-flow pump configurations.

B74-10128
COMPUTER PROGRAM FOR CALCULATING CRITICAL SPEEDS OF ROTATING SHAFTS

R. J. Trivisonno
 Dec. 1974

LEWIS-11910

Shaft may include bearings, couplings, extra masses, and disks for gyroscopic effect. Shaft deflection is taken into account and provision is made in program for sections of shaft that are tapered. Plotter produces drawing of shaft with superimposed deflection curves at critical speeds together with all pertinent information related to shaft.

B74-10129
COMPUTER PROGRAM FOR CALCULATING LAMINAR, TRANSITIONAL, AND TURBULENT BOUNDARY LAYERS FOR A COMPRESSIBLE AXISYMMETRIC FLOW

J. A. Albers and J. L. Gregg
 Dec. 1974

LEWIS-12178

Finite-difference computer program calculates viscous compressible boundary layer flow over either planar or axisymmetric surfaces. Flow may be initially laminar and progress through transitional zone to fully turbulent flow, or it may remain laminar, depending on imposed boundary conditions, laws of viscosity, and numerical solution of momentum and energy equations.

B74-10130
COMPUTER PROGRAM FOR CALCULATING VELOCITIES AND STREAMLINES ON MID-CHANNEL FLOW SURFACE OF AXIAL OR MIXED-FLOW TURBOMACHINE

T. Katsanis and W. D. McNally
 Dec. 1974

LEWIS-12129

Program uses finite-difference and stream filament methods, input consists of blade and flow-channel geometry, upstream and downstream flow conditions from hub to shroud, and mass flow. Output includes streamline coordinates, flow angles, and velocities on mid-channel flow surface.

B74-10145
SPACE ULTRARELIABLE MODULAR COMPUTER (SUMC) INSTRUCTION SIMULATOR

R. T. Curran (Computer Sci. Corp.) and W. A. Hornfeck (Computer Sci. Corp.)
 Sep. 1974

M-FS-22697

Simulator has been constructed as set of quasi-independent modules, regulated by one control module. All machine-dependent

functions have been resolved such that simulation package is as machine independent as possible.

B74-10169
EIGENFUNCTION SOLUTION OF DAMPED STRUCTURAL SYSTEMS: DAMP

K. K. Gupta
 Sep. 1974

NPO-13480

Program uses combination of procedures to determine eigenfunction solutions of discrete damped structures, including spinning ones, while fully exploiting banded configuration of associated matrices.

B74-10186
COMPUTER PROGRAM FOR STRUCTURAL ANALYSIS OF LAYERED ORTHOTROPIC RING-STIFFENED SHELLS OF REVOLUTION (SALORS): LINEAR STRESS ANALYSIS OPTION

M. S. Anderson, W. L. Heard, Jr., and M. M. Chen (Boston Univ.)

Nov. 1974

LANGLEY-11569

Program handles segmented, laminar, orthotropic shells with discrete rings. Meridional variations are handled in material properties, temperatures, and wall thickness. Allows for linear variations of temperature through each layer of shell wall.

B74-10189
MODEL OPTIMIZATION USING STATISTICAL ESTIMATION

J. D. Collins (J. H. Wiggins Co.), G. C. Hart (J. H. Wiggins Co.), T. K. Hasselman (J. H. Wiggins Co.), B. Kennedy (J. H. Wiggins Co.), and H. Pack, Jr. (J. H. Wiggins Co.)

Nov. 1974

M-FS-22873

Program revises initial or prior estimate of stiffness and mass parameters to parameters yielding frequency and mode characteristics in agreement with test data. Variances are also calculated and consequently define uncertainties of final estimates.

B74-10190
FORTAN AUTOMATIC CODE EVALUATION SYSTEM (FACES)

J. C. Browne (Inform. Res. Associates), T. Davis (Inform. Res. Associates), A. Haller (Inform. Res. Associates), M. Henneman (Inform. Res. Associates), R. Kleir (Inform. Res. Associates), and G. L. Lasseter (Inform. Res. Associates)

Nov. 1974

M-FS-22910

Software package takes as input FORTRAN program which may contain many modules (subroutines and functions). Main parts: (1) FORTRAN front end gathers information about input program and (2) set of routines organized as diagnostic package evaluates information and prints warning messages concerning actual or potential errors.

B74-10203
COMPUTER PROGRAM FOR BUCKLING LOADS OF ORTHOTROPIC LAMINATED STIFFENED PANELS SUBJECTED TO BIAXIAL IN-PLACE LOADS (BUCLASP 2)

A. V. Viswanathan (Boeing Co.) and M. Tamekuni (Boeing Co.)
 Nov. 1974

LANGLEY-11199

General-purpose program performs exact instability analyses for structures such as unidirectionally-stiffened, rectangular composite panels. Program was written in FORTRAN IV and COMPASS for CDC-series computers.

B74-10204
COMPUTER PROGRAM FOR STRESSES AND BUCKLING OF HEATED COMPOSITE-STIFFENED PANELS AND OTHER STRUCTURES (BUCLASP 3)

A. V. Viswanathan (Boeing Co.), M. Tamekuni (Boeing Co.), and L. L. Tripp (Boeing Co.)

Nov. 1974

LANGLEY-11533

09 COMPUTER PROGRAMS

General-purpose program is intended for thermal stress and instability analyses of structures such as axially-stiffened curved panels. Two types of instability analyses can be effected by program: (1) thermal buckling with temperature variation as specified and (2) buckling due to in-plane biaxial loading.

B74-10205

COMPUTER PROGRAM FOR STRESS, STABILITY, AND VIBRATION OF COMPLEX BRANCHED SHELLS OF REVOLUTION: BOSOR 4

D. Bushnell (Lockheed Missiles and Space Co.)

Nov. 1974

LANGLEY-11209

Code is easy to use yet is general with respect to: (a) type of analysis to be performed; (b) geometry of shell meridian; (c) type of wall construction; (d) type of boundary conditions, ring supports, and branching configuration; and (e) type of loading.

B74-10206

COMPUTER PROGRAM FOR STEAMTUBE CURVATURE ANALYSIS: ANALYTICAL METHOD

D. R. Ferguson (GE), P. H. Heck (GE), J. S. Keith (GE), D. J. Lahti (GE), and C. L. Merkle (GE)

Nov. 1974

LANGLEY-11535

Program provides design information for low-drag, high-drag-divergence, Mach number isolated nacelles suitable for use with advanced high-bypass-ratio, turbofan engines. One element is development of method to predict inviscid pressure distribution and flow field about arbitrary axisymmetric ducted body at transonic speeds.

B74-10207

INVESTIGATION OF EXIT-VELOCITY STRATIFICATION EFFECTS ON JETS IN A CROSSFLOW (STRJET)

H. Ziegler (Northrop Corp.)

Nov. 1974

LANGLEY-11581

Program determines flow field about jets with velocity stratification exhausting into crossflow. Jets with three different types of exit-velocity stratification have been considered: (a) jets with relatively high-velocity core, (b) jets with relatively low-velocity core, and (c) jets originating from vaned nozzle.

B74-10215

EIGENVALUE ALGORITHM BASED ON A COMBINED STURM SEQUENCE AND INVERSE ITERATION TECHNIQUE (EASI)

K. K. Gupta

Nov. 1974

NPO-13368

Desired roots are first isolated by Sturm sequence procedure. Then special variant of inverse iteration technique is applied for individual determination of each root along with its vector. Program was written in FORTRAN V for UNIVAC 1100-series computers.

B74-10221

CALCULATION OF AERODYNAMIC CHARACTERISTICS OF STOL AIRCRAFT

M. F. E. Dillenius (Nielson Eng. and Res., Inc.), M. R. Mendenhall (Nielson Eng. and Res., Inc.), and S. B. Spangler (Nielson Eng. and Res., Inc.)

Nov. 1974

ARC-10882

Method predicts lift and pitching moment characteristics of STOL aircraft with externally-blown, jet-augmented wing-flap combinations using potential-flow approach which involves combination of two flow models. Method can accommodate multiple engines per wing panel and part-span flaps.

B74-10225

COMPUTERIZED LOGIC DESIGN OF DIGITAL CIRCUITS

S. Gussow (Sperry Rand Corp.) and R. Oglesby (Sperry Rand Corp.)

Nov. 1974

M-FS-22401

Procedure performs all work required for logic design of digital counters or sequential circuits and simplification of Boolean expressions. Program provides simple, accurate, and comprehensive logic design capability to users both experienced and totally inexperienced in logic design

B74-10236

NUMERICAL PROGRAM FOR ANALYSIS OF THREE-DIMENSIONAL SUPERSONIC EXHAUST FLOW FIELDS (CHAR 3D)

S. Dash (Advanced Technol. Labs., Inc.), P. Del Guidice (Advanced Technol. Labs., Inc.), A. Ferri (Advanced Technol. Labs., Inc.), and G. Roffe (Advanced Technol. Labs., Inc.)

Dec. 1974

LANGLEY-11596

Choice of reference plane orientation depends on specific nozzle geometry, with different configurations requiring different reference plane systems. In addition, for given configuration several reference systems may be used in different regions of flow field, so each system is locally aligned with flow.

B74-10279

AUTOMATED MAINTENANCE FOR COMPLEX HYBRID SYSTEMS

G. C. Gilley

Jan. 1975

NPO-13143

Digital computer, Control Computer Subsystem (CCS), possess high degree of fault tolerance. CCS embodies concepts of self-test and repair. It is capable of monitoring its own performance and of identifying and replacing with standby spare any of its units that fail.

B75-10002

COMPUTER PROGRAM FOR THERMODYNAMIC ANALYSIS OF OPEN-CYCLE MULTISHAFT POWER SYSTEM

A. J. Glassman

Mar. 1975

LEWIS-12324

Program computes specific power output, specific fuel consumption, and cycle efficiency for power systems having any number of shafts up to maximum of five. Maximum temperatures should be no higher than about 2000 K (3140 F) because molecular dissociation is not included in stoichiometry.

B75-10005

COMPUTER PROGRAM TO GENERATE ENGINE INLET FLOW CONTOUR MAPS AND DISTORTION PARAMETERS

J. H. Dicus

Mar. 1975

LEWIS-12247

Program generates inlet contour maps with choice of mapping parameters. Contour maps are represented by symbols on picture produced by line printer. Program also generates variety of simple circumferential and radial distortion parameters that enable calculation of almost any specific distortion parameter.

B75-10015

REGENERATIVE COOLING DESIGN AND ANALYSIS COMPUTER PROGRAM

J. G. Gerstley (Rockwell Intern. Corp.) and R. D. Tobin (Rockwell Intern. Corp.)

Apr. 1975

LEWIS-12110

Program evaluates influences of heat transfer, stress, and cycle life. Coolant passages may be tubes or channels, with or without gas-side wall coating. Program options include two-dimensional thermal analysis model of tube or channel cross-section using relaxation technique with variable number of nodes.

B75-10018

COMPUTER PROGRAMS FOR CALCULATING POTENTIAL FLOW IN PROPULSION SYSTEM INLETS

N. O. Stockman and S. L. Button

Apr. 1975

LEWIS-12152

Calculational procedure evolved in process of designing inlets. Douglas axisymmetric potential flow program called EOD calculates incompressible potential flow about arbitrary bodies. Program SCIRCL generates input for EOD from inlet components. Program COMBYN takes basic solutions output by EOD and combines them into solutions of interest and applied compressibility correction.

B75-10019
COMPUTER PROGRAMS FOR HANDLING PROPULSION SYSTEM NOISE DATA

F. J. Montegani

Apr. 1975

LEWIS-12285

Computer programs have been developed for efficient handling of one-third-octave band noise data originating from outdoor full-scale fan noise facility and engine acoustic facility at Lewis Research Center.

B75-10020
COMPRESSIBLE FLOW COMPUTER PROGRAM FOR GAS FILM SEALS

J. Zuk and P. J. Smith

Apr. 1975

LEWIS-12286

Computer program, AREAX, calculates properties of compressible fluid flow with friction and area change. Program carries out quasi-one-dimensional flow analysis which is valid for laminar and turbulent flows under both subsonic and choked flow conditions. Program was written to be applied to gas film seals.

B75-10021
COMPUTER PROGRAM FOR DEFINITION OF TRANSONIC AXIAL-FLOW COMPRESSOR BLADE ROWS

J. E. Crouse

Apr. 1975

LEWIS-12325

Particular type of blade element used has two segments which have centerlines and surfaces described by constant change of angle with path distance on cone. Program is result of rework of earlier program to give major gains in accuracy, reliability and speed. It also covers more steps of overall compressor design procedure.

B75-10029
ANALYTIC MODEL FOR ASSESSING THERMAL PERFORMANCE OF SCUBA DIVERS

L. D. Montgomery

Feb. 1975

ARC-10927

To assist design of adequate protective clothing, mathematical model of man's thermoregulatory system has been developed so that body thermal responses under immersed conditions can be predicted accurately. Experimental data encompassed wide range of water temperatures, protective clothing, breathing-gas mixtures, and durations of immersion.

B75-10032
VIEW FACTOR COMPUTER PROGRAM (VIEW)

C. E. Jackson, Jr. and E. F. Puccinelli

Apr. 1975

GSFC-11910

Existing view factor program, RAVFAC, was modified to accept NASTRAN and/or RAVFAC surface descriptions. Output formatting was altered to produce view factor matrices which could be directly input to NASTRAN.

B75-10033
EXTENSIVE SET OF MACROS FOR STRUCTURED PROGRAMMING IN OS/360 ASSEMBLY LANGUAGE (STRCMACS)

C. W. Barth

Apr. 1975

GSFC-11938

Development of consistent assembly language structured programming techniques has been enhanced by use of assembly macros developed for structured programming. Set of macros was written for IBM OS/360 Assembly language.

B75-10053
JPL TRANSIENT RADIATION ANALYSIS BY COMPUTER PROGRAM (JTRAC)

S. Weinstein

Apr. 1975

NPO-13470

Digital computer program, JTRAC, simulates time response of electronic circuit to arbitrary forcing functions which may include electrical and/or radiation stimuli. Program is designed to solve linear and nonlinear simultaneous equations which characterize mathematical models used to predict circuit response for electrical and/or radiation input.

B75-10060
PREDICTION OF AIRCRAFT NOISE SOURCE AND ESTIMATION OF NOISE-LEVEL CONTOURS

N. A. Peart (Boeing Co.)

Apr. 1975

ARC-10880

Two computer programs aid aircraft designers who need to identify noise characteristics of various aircraft and engine configurations; calculated noise levels can then be compared with community goals for noise limitation.

B75-10093
FOUR-DIMENSIONAL WORLDWIDE ATMOSPHERIC MODELS: ANYPT AND ANYRG

D. Johnson, C. Brown, D. Spiegler (Environ. Res. and Technol.), and M. Fowler (Environ. Res. and Technol.)

Jun. 1975

M-FS-22838

Computer programs read magnetic-tape data bases and computer meteorological profiles for any position, time, and height (from zero to 25 km). System assists in analyses of distortion of information obtained from aircraft-mounted or spacecraft-mounted electromagnetic sensors.

B75-10094
COMPUTER PROGRAM FOR NUMERICAL ANALYSIS OF STIFFENED SHELLS OF REVOLUTION

J. Key and V. Valbonas (Grumman Aerospace Co.)

Jun. 1975

M-FS-23027

Programs, using Love-Reissner first-order shell theory, can analyze orthotropic thin shells of revolution subjected to unsymmetric distributed loading or concentrated line loads and thermal strains. They can perform stability or vibration analysis of thin shells of revolution subjected to axisymmetric distributed loading or concentrated line loads and thermal strains.

B75-10100
PROGRAM FOR ANALYSIS OF NONLINEAR EQUILIBRIUM AND STABILITY (PANES)

R. G. Vos (Boeing Co.)

Jun. 1975

M-FS-23172

PANES utilizes improved techniques for analysis of structures with material and geometric nonlinearities, including limit point and bifurcations behavior which occurs in buckling and collapse problems. Incremental loading, Newton-Raphson iteration, and higher order methods are used in program.

B75-10106
COMPUTER PROGRAM FOR ANALYSIS OF VECTORCARDIOGRAMS (VECTAN II)

G. W. Hoffer, D. P. Golden (Technol. Inc.), and R. A. Wolthuis (Technol. Inc.)

Jun. 1975

MSC-14386

VECTAN II accepts as input digitized three-lead VCG data sampled at 320 samples/second/lead, analyzing one VCG complex in each 5-second interval for experiments of up to 25 minutes duration. Program calibrates these data, locates major waveforms, performs waveform analyses, and produces statistical summary of analyzed data.

09 COMPUTER PROGRAMS

B75-10130

COMPUTER MODELING OF ARC DRIVERS

R. E. Dannenberg and P. I. Slapnicar (Stanford Univ.)
Jun. 1975

ARC-10955

Model is generated from description of element connections involved in complete arc network, list of corresponding circuit element values, description of circuit current excitation, and list of out-puts desired. Waveform of current is determined by structure of capacitor storage system, driver geometry, and preset driver conditions.

B75-10133

MULTIPLEXING TECHNIQUE FOR COMPUTER COMMUNICATIONS VIA SATELLITE CHANNELS

R. Binder (Hawaii Univ.)

Jun. 1975

ARC-10879

Multiplexing scheme combines technique of dynamic allocation with conventional time-division multiplexing. Scheme is designed to expedite short-duration interactive or priority traffic and to delay large data transfers; as result, each node has effective capacity of almost total channel capacity when other nodes have light traffic loads.

B75-10140

METHOD OF IDENTIFYING CLUSTERS REPRESENTING STATISTICAL DEPENDENCIES IN MULTIVARIATE DATA

W. J. Borucki, D. H. Card, and G. C. Lyle

Jul. 1975

ARC-10744

Approach is first to cluster and then to compute spatial boundaries for resulting clusters. Next step is to compute, from set of Monte Carlo samples obtained from scrambled data, estimates of probabilities of obtaining at least as many points within boundaries as were actually observed in original data.

B75-10143

ALGORITHM FOR NONLINEAR STATIONARY NAVIER-STOKES PROBLEM

R. E. Gabrielsen and S. Karel

Jul. 1975

ARC-10960

Results of applications of algorithm suggest that it has potential application to variety of related fluid flow problems, such as presently intractable separation problem of aerodynamics. Details of mathematical development, as well as computation of explicit error estimates, are available.

B75-10146

SIMPLE COMPUTER METHOD PROVIDES CONTOURS FOR RADIOLOGICAL IMAGES

J. D. Newell (California Univ., San Diego), R. A. Keller (California Univ., San Diego), and N. A. Baily (California Univ., San Diego)

Jul. 1975

ARC-10940

Computer is provided with information concerning boundaries in total image. Gradient of each point in digitized image is calculated with aid of threshold technique; then there is invoked set of algorithms designed to reduce number of gradient elements and to retain only major ones for definition of contour.

B75-10155

REMOTE FILE INQUIRY (RFI) SYSTEM

Innovator not given (IBM) Aug. 1975

KSC-10837

System interrogates and maintains user-definable data files from remote terminals, using English-like, free-form query language easily learned by persons not proficient in computer programming. System operates in asynchronous mode, allowing any number of inquiries within limitation of available core to be active concurrently.

B75-10172

TRIMETRIC SCALE FOR DRAFTING MACHINES

J. C. Ryan (Rockwell Intern. Corp.) and R. Chu (Rockwell Intern. Corp.)

Aug. 1975

MSC-15829; JSC-19391

Device allows three basic projections to be drawn from a single scale zero setting. Ellipse proportions are included for convenience. Axonometric projections can also be determined.

B75-10186

RETSCP-A COMPUTER PROGRAM FOR ANALYSIS OF ROCKET ENGINE THERMAL STRAINS WITH CYCLIC PLASTICITY

R. W. Miller (Atkins and Merrill, Inc.)

Oct. 1975

LEWIS-12388

Finite element program employs three-dimensional isoparametric element for analysis of rocket engine thermal strains with cyclic plasticity.

B75-10187

COMPUTER PROGRAM FOR CALCULATING WATER AND STEAM PROPERTIES

R. C. Hendricks, I. C. Peller, and A. K. Baron

Nov. 1975

LEWIS-12519

Computer subprogram calculates thermodynamic and transport properties of water and steam. Program accepts any two of pressure, temperature, and density as input conditions. Pressure and either entropy or enthalpy are also allowable input variables. Output includes any combination of temperature, density, pressure, entropy, enthalpy, specific heats, sonic velocity, viscosity, thermal conductivity, surface tension, and the Laplace constant.

B75-10188

COMPUTER PROGRAM FOR CALCULATING THERMODYNAMIC AND TRANSPORT PROPERTIES OF FLUIDS

R. C. Hendricks, A. K. Baron, and I. C. Peller

Oct. 1975

LEWIS-12520

Computer code has been developed to provide thermodynamic and transport properties of liquid argon, carbon dioxide, carbon monoxide, fluorine, helium, methane, neon, nitrogen, oxygen, and parahydrogen. Equation of state and transport coefficients are updated and other fluids added as new material becomes available.

B75-10194

EXECUTIVE COMPUTER PROGRAM FOR LINKING INDEPENDENT COMPUTER PROGRAMS: ODINEX

C. R. Latt (Aerophysics Res. Corp.), D. S. Hague (Aerophysics Res. Corp.), and D. A. Watson (Aerophysics Res. Corp.)

Sep. 1975

LANGLEY-11324

Program controls sequence of execution of network of program elements and maintains data base of common information which forms communication link among them. Approach is applicable to any multiple-program task.

B75-10242

COMPUTER PROGRAM FOR THE ATTENUATION OF HIGH BYPASS TURBOFAN ENGINE NOISE

H. F. Veldman (Boeing Co.)

Oct. 1975

LEWIS-12179

Two computer programs determine effect of boundary layer on attenuation of sound in a circular duct lined with material used in noise suppression in fan inlet and exhaust ducts of turbofan engines.

B75-10243

IMPROVED AXISYMMETRIC POTENTIAL FLOW COMPUTER PROGRAM

J. L. Hess (McDonnell Douglas Corp.)

Oct. 1975

LEWIS-12387

Basic method of calculating potential flow has been refined to increase accuracy of results and to reduce computational time. Program calculates low speed flows about or within bodies of

axially symmetric shape. Solid body, inlet, and purely internal flow problems can be solved.

B75-10252
COMPUTER INTEGRATION OF HYDRODYNAMICS EQUATIONS FOR HEAT PIPES

D. K. Edwards (TRW Systems Group), J. E. Eninger (TRW Systems Group), and B. D. Marcus (TRW Systems Group)
 Oct. 1975

GSFC-12009

Program has five operational modes that provide user flexibility in answering crucial heat-pipe design questions. User specifies heat input and rejection distribution.

B75-10263
IMPROVED GENERAL-PURPOSE NAMELIST PROCESSOR
 E. W. Wojtaszek (Martin Marietta Corp.)
 Oct. 1975

LANGLEY-11834

Processor is written in FORTRAN with minimal machine-dependent coding, allowing easy conversion to various digital computers. It eliminates 19 continuation-card limit of current namelist processors and permits unlimited number of variables to be read in a single namelist declaration.

B75-10273
A STUDY OF ACCURACY IN SELECTED NUMERICAL ANALYSIS INTEGRATION TECHNIQUES

W. M. Lear (TRW, Inc.)
 Oct. 1975 See also NASA-CR-141784

MSC-14802

Report discusses several methods of performing numerical integration with computer. When data can be expressed as state vector that is dependent variable in a differential equation, self-starting integrators can be used to predict future data.

B75-10278
GENERATION OF KEY IN CRYPTOGRAPHIC SYSTEM FOR SECURE COMMUNICATIONS

M. Perlman
 Oct. 1975

NPO-13451

Report discusses key generation for transmission of confidential data. A number of feedback functions are discussed for generation of long key sequences.

B75-10292
COMPUTER SYSTEM FOR LIBRARY ACCESS

A. DelFrate
 Dec. 1975
GSFC-11952

Program performs traditional file creation, maintenance, and output. MARC II compatible data records can be added, changed, or deleted in bibliographic file.

B75-10294
GENERAL OPTICS EVALUATION PROGRAM (GENOPTICS)

B. J. Howell
 Dec. 1975

GSFC-12038

Program prints and plots results of computations such as ray traces, radial energy distributions, and designs of two-mirror telescopes.

B75-10295
SMALL INTERACTIVE IMAGE PROCESSING SYSTEM (SMIPS)

J. G. Moik (Computer Sci. Corp.)
 Dec. 1975

GSFC-12079

System facilitates acquisition, digital processing, and recording of image data, as well as pattern recognition in an iterative mode.

B75-10302
THE LANGLEY RESEARCH CENTER NASA/PERT TIME III

Innovator not given (Project Schedules and Analysis Group) Dec. 1975

LANGLEY-11887

Program provides practical system for total project management in areas of planning, scheduling, resource control, and reporting. It allows use of existing management and administrative tools and processes and is applicable to many types of projects.

B75-10318
POWER SPECTRUM ANALYSIS OF STAGGERED QUADRIPHASE-SHIFT-KEYED SIGNALS

F. L. McWhorter (Magnavox Co.) and D. E. Cartier (Magnavox Co.)

Dec. 1975

MSC-14865

Mathematical analysis of power spectrum of outputs from high-reliability communication system is used to determine system bandwidth. Analysis provides mathematical relationships of signal power spectrum at output of hard limiter for any type of baseband pulse input subjected only to output parameter constraints.

B75-10338
MINIMIZATION SEARCH METHOD FOR DATA INVERSION

A. L. Fymat
 Dec. 1975 See also B75-10335

NPO-99999

Technique has been developed for determining values of selected subsets of independent variables in mathematical formulations. Required computation time increases with first power of the number of variables. This is in contrast with classical minimization methods for which computational time increases with third power of the number of variables.

SUBJECT INDEX

Cumulative Index to NASA Tech Briefs

1970 — 1975

Subject Index

The title of each Tech Brief is listed under several selected subject headings to provide the user with a variety of approaches in his search for specific information. The Tech Brief number, e.g., B75-10225, is located under and to the right of the title and is followed by a two-digit number, e.g., 04, which designates the subject category in which the entire entry can be found.

A

ABLATION

- Low pressure arc electrode
ARC-10012 B70-10329 01
- Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09
- Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
- Aerotherm charring materials ablation computer program
LEWIS-11854 B73-10065 09

ABLATIVE MATERIALS

- The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 B70-10146 04
- Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
- Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04
- Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06
- Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
- High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
- Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
- Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09

- Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04
- Fabrication techniques for polybenzimidazole composites
ARC-10724 B73-10269 04
- Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 B74-10027 04
- Chemical equilibrium of ablation materials including condensed species
LANGLEY-11801 B75-10225 04

ABNORMALITIES

- Simple non-destructive tests for electroexplosive devices
NPO-11563 B72-10315 01

ABRASION

- Effects of hydrogen on ELI titanium alloy Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
- Improved heat-resistant garments
MSC-12109 B70-10544 08
- High strength, medium density molded foam
AEC-10053 B72-10235 04
- Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
MSC-14247 B72-10616 08

ABRASION RESISTANCE

- Improved fire-resistant coatings
GSFC-10072 B71-10198 04
- Sheet plastic filters for solar cells
NPO-11464 B72-10090 04
- Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 B72-10445 08
- An improved technique for the use of zinc-rich coatings
KSC-10766 B73-10149 04
- Diamine curing agents for polyurethanes
LANGLEY-11829 B75-10261 08

ABRASIVES

- Phenolic cutter for machining foam insulation
M-FS-14170 B70-10089 07
- Low-cost orbiting grinder for cutting ducts
M-FS-20684 B70-10126 07
- Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06
- Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07
- Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04

ABSORBENTS

- Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 B70-10334 04

- Molecular sieves control contamination and and insulate in thermal regenerators - A concept
GSFC-10910 B70-10424 07
- Sorption vacuum trap
ERC-90051 B70-10449 06
- Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 B71-10356 04
- Comparison of catalyst activity
ARC-10493 B72-10201 04
- Solid amine compounds as sorbents for carbon dioxide: A concept
ARC-10571 B72-10421 04
- Gas chromatography of volatile organic compounds
JSC-14428 B73-10406 04
- New urea-absorbing polymers for artificial kidney machines
NPO-13620 B75-10336 04

ABSORBERS (EQUIPMENT)

- Quick-change absorption column
ARC-10952 B75-10142 03

ABSORBERS (MATERIALS)

- Solid amine compounds as sorbents for carbon dioxide: A concept
ARC-10571 B72-10421 04
- Noise suppressor
LANGLEY-11141 B74-10261 03
- Large-scale solar thermal collector concepts
M-FS-23167 B75-10098 03

ABSORPTANCE

- Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03

ABSORPTION

- Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
- Space-suit carbon dioxide absorption system: A concept
ARC-10546 B72-10168 05
- Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
- Carbon dioxide concentration indicator
HQ-10582 B72-10526 05
- Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- Carrier suppression device for a heterodyne gas analyzer
ARC-10785 B73-10381 03
- Polymers used to absorb fats and oils: A concept
NPO-11609 B74-10210 05

ABSORPTION CROSS SECTIONS

- Single-level resonance parameters fit nuclear cross-sections
NUC-10101 B70-10686 03

ABSORPTION SPECTRA

- Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02

ABSORPTION SPECTROSCOPY

- Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04
 Miniature carbon dioxide sensor
 MSC-13332 B71-10536 03
 Direct analysis of hydrogen/deuterium mixtures: A concept
 NPO-11322 B72-10244 03
 An absorption spectrum amplifier for determining gas composition
 HQ-10752 B72-10524 03
 Formaldehyde monitor for automobile exhausts
 LANGLEY-11352 B73-10228 04
 Improved nondispersive infrared analyzer
 ARC-10802 B74-10243 03
- ABSORPTION SPECTROSCOPY**
 Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Inexpensive net solar flux radiometer
 HQ-10087 B70-10296 03
 An absorption spectrum amplifier for determining gas composition
 HQ-10752 B72-10524 03
 Detection of nitric oxide pollution
 ARC-10709 B73-10018 03
 Measurement of temperature profiles in hot gases and flames
 LEWIS-12055 B74-10060 03
 Wavelength-selective, sequential
 Q-switching laser cavity
 LANGLEY-11045 B74-10134 03
- ABSORPTIVITY**
 Directional control of radiant heat
 LEWIS-90237 B70-10321 03
 Nonflammable organic-base paint for oxygen-rich atmospheres
 M-FS-20486 B71-10077 04
 Water purification by reverse osmosis using heterocyclic polymer membranes
 LANGLEY-10514 B72-10230 04
 Measurement of electron density and temperature in plasmas
 ARC-10598 B72-10563 03
 Microwave emission from granular silicates
 NPO-11702 B73-10140 03
- ABSTRACTS**
 A study of NACA and NASA published information of pertinence in the design of light aircraft
 LANGLEY-10778 B70-10725 06
- AC GENERATORS**
 Design and evaluation of brushless electrical generators
 LEWIS-10124 B70-10554 02
 High-strength magnetic materials
 LEWIS-10697 B70-10596 03
 Prediction of windage power loss in alternators
 LEWIS-10939 B71-10074 06
 Heat-operated cryogenic electrical generator
 NPO-13303 B75-10116 03
- ACCELERATING AGENTS**
 Instant acting adhesive system
 MSC-13732 B71-10317 04
- ACCELERATION (PHYSICS)**
 Microprogram scheme for automatic recovery from computer error
 MSC-13387 B70-10642 09
 High-impact dynamic-response analysis of nonlinear structures
 NPO-11716 B71-10134 09
 An investigation of tandem-row, high-head pump inducers
 M-FS-21139 B71-10152 07

- Inertia diaphragm pressure transducer
 XAC-2981 B71-10200 05
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 Balanced-bellows spirometer
 XAC-01547 B72-10279 05
 Linear accelerator: A concept
 KSC-10618 B72-10636 06
 G-load indicator and warning device for aircraft
 ARC-10806 B74-10171 02
- ACCELERATION PROTECTION**
 Peak acceleration limiter
 NPO-10556 B72-10007 01
- ACCELERATION (PHYSIOLOGY)**
 Mathematical model for predicting human vertebral fracture
 ARC-10691 B73-10033 05
- ACCELEROMETERS**
 Telemetry for impact acceleration measurements
 ARC-10289 B70-10079 01
 Prediction of faults in components of machinery in motion
 GSFC-10801 B70-10116 06
 Improved calibration of accelerometers at temperatures down to -450 degrees F
 M-FS-18561 B70-10173 03
 Tracking antenna deformation program
 GSFC-11191 B71-10017 09
 Experimental determination of damping parameters of viscoelastic materials
 M-FS-20534 B71-10297 04
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06
 Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02
 Inertial reference unit
 NPO-11518 B72-10094 02
 Gravitational gradiometer measures mass changes
 M-FS-20814 B72-10140 03
 New motor shaft angular accelerometer concept
 LANGLEY-11030 B73-10119 02
 Simultaneous processing of vibration test data
 NPO-11616 B73-10139 01
 Accelerometer-controlled automatic braking system
 LANGLEY-11383 B73-10419 06
 Suppression of bending motion in elastic bodies
 XAC-05632 B74-10070 06
 Temperature compensation of digital inertial sensors
 NPO-13044 B74-10106 02
 New aircraft instrument indicates turbulence intensity
 LANGLEY-11833 B75-10227 03
- ACCEPTABILITY**
 Evaluation of polymeric products for use in thermal-vacuum environment
 NPO-11288 B70-10612 04
- ACCEPTOR MATERIALS**
 Optimum doping achieves high quantum yields in GaAs photoemitters
 M-FS-20962 B71-10357 03
- ACCIDENT INVESTIGATION**
 Liquid and gaseous oxygen safety review
 LEWIS-12041 B73-10310 04

SUBJECT INDEX

- Directory of aerospace safety specialized information sources
 LEWIS-12223 B74-10019 03
- ACCIDENT PREVENTION**
 Recommended safety guides for industrial laboratories and shops
 SAN-10050 B71-10175 07
 High voltage protection network
 ARC-10197 B72-10119 02
 Technical management techniques for identification and control of industrial safety and pollution hazards
 M-FS-21883 B72-10588 05
 Seat belt restraint system
 ARC-10519 B72-10692 06
 Electroschock protection circuit
 JSC-14222 B73-10261 02
 Short-range laser obstacle detector
 NPO-11856 B74-10101 03
- ACCIDENTS**
 Medical vest broadens treatment capability
 KSC-10577 B70-10529 05
- ACCLIMATIZATION**
 Liquid-cooled liner for helmets
 ARC-10534 B74-10249 05
- ACCUMULATIONS**
 Accumulative weights program
 M-FS-15066 B71-10181 09
 Microbial burden prediction model program
 NPO-11709 B71-10401 09
- ACCUMULATORS**
 An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 B70-10611 03
 Hydraulic actuator motion limiter ensures operator safety
 ARC-10131 B71-10233 07
 Fast carry accumulator design
 M-FS-20902 B71-10274 01
 Coaxial inverted geometry epitaxial transistor
 ARC-10330 B72-10056 01
 Flexible desk top computers using Large Scale Integration (L.S.I.) chips
 M-FS-21277 B72-10112 01
 High efficiency collector for microwave tubes
 LEWIS-11192 B72-10259 03
- ACCURACY**
 Constant current source for converting absolute temperatures to analog voltages
 NPO-10733 B70-10164 02
 Design procedure for improved active filters
 M-FS-20445 B70-10238 02
 Simple, accurate temperature-measuring instrument
 MSC-12327 B70-10303 01
 High precision cryogenic thermal conductivity standards
 NUC-10555 B70-10310 04
 Test fixture insures high degree of accuracy in flexure tests
 NUC-10246 B70-10358 07
 Laser method for finding axis of rotation
 ARC-10388 B70-10439 03
 Quick calculation method for fluid flow through duct systems
 M-FS-15069 B70-10487 02
 A radiometric method for measuring the insertion loss of radome materials
 NPO-11423 B70-10519 02

- Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
- High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
- Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
- Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 B70-10577 07
- Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
- Digital simulation program improved
M-FS-01504 B70-10705 09
- A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06
- Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07
- Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
- Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
- Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
- Third order digital-to-analog converter
MSC-12458 B72-10030 02
- Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
- Snap dynamics
M-FS-21531 B72-10265 09
- Small tubing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
- Precision machining of steel decahedrons
M-FS-21361 B72-10597 07
- Magnetometer uses bismuth-selenide
LEWIS-11632 B72-10629 03
- ACETATES**
Intumescent coatings as fire retardants
ARC-10099 B70-10450 04
- Water purification by reverse osmosis using heterocyclic polymer membranes
LANGLEY-10514 B72-10230 04
- ACETIC ACID**
Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 B72-10006 05
- ACETONE**
Polymerization of perfluorobutadiene
NPO-10863 B70-10131 04
- New method for photoresist stripping
ERC-10239 B70-10497 04
- Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
LANGLEY-10940 B72-10115 04
- ACIDS**
Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
- Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08
- Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
- Microwave dosimeter - A concept
HQ-10407 B71-10075 01
- New type of trifunctional alcohol
NPO-10714 B72-10553 04
- ACOUSTIC ATTENUATION**
Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
- Ultrasonic calibration device
LANGLEY-11435 B73-10420 03
- Improved method for design of expansion-chamber mufflers with application to operational helicopter
LANGLEY-11548 B73-10471 03
- Noise suppressor
LANGLEY-11141 B74-10261 03
- Transmission Oscillator Ultrasonic Spectrometer (TOUS): A new research instrument
LANGLEY-11735 B75-10035 03
- ACOUSTIC EXCITATION**
Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06
- Mechanical impedance and acoustic mobility measurement techniques of specifying vibration environments
M-FS-22016 B73-10059 06
- ACOUSTIC IMPEDANCE**
Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
- ACOUSTIC MEASUREMENTS**
An unconfined, large-volume hydrogen/air explosion
NUC-11000 B71-10041 03
- Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
- Acoustic spectral analysis and testing techniques
NPO-11554 B72-10341 03
- Acoustic emission used as weld quality monitor
AEC-10018 B72-10427 08
- Acoustical analysis system
GSFC-11087 B72-10751 02
- Automated analysis of blood pressure measurements (Korotkov sound)
MSC-13999 B72-10756 05
- Acoustic-emission signal-processing analog unit for locating flaws in large tanks
M-FS-24424 B73-10325 06
- Porous surface microphone for measuring acoustic signals in turbulent windstreams
ARC-10776 B73-10490 03
- Computer programs for handling propulsion system noise data
LEWIS-12285 B75-10019 09
- Prediction of aircraft noise source and estimation of noise-level contours
ARC-10880 B75-10060 09
- Handbook of noise ratings
LANGLEY-11799 B75-10075 03
- Sound separation probe
LEWIS-12507 B75-10286 03
- ACOUSTIC PROPERTIES**
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
- Improved audio reproduction system
ARC-10404 B72-10059 01
- High-directivity acoustic antenna
ARC-10789 B74-10050 02
- Acoustically controlled integrated laser for communications systems
NPO-13175 B75-10047 03
- Levitation of objects using acoustic energy
M-FS-23261 B75-10232 03
- ACOUSTIC SCATTERING**
High-endrgy lasers by using distributed reflection: A concept
NPO-13346 B75-10118 03
- ACOUSTIC VELOCITY**
Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
- Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04
- Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
- Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07
- Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
- ACOUSTICS**
Acoustic vibration test detects intermittent electrical discontinuities
MSC-15158 B70-10118 01
- Methods for measuring the loudness and noisiness of complex sounds
HQ-10332 B70-10260 03
- Novel wave generator adaptable to indoor surfboarding
LEWIS-11096 B70-10563 03
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
- Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
- Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
- Reduction of fan noise: A concept
ARC-10312 B72-10040 06
- Quick release acoustic sensor holding fixture
MSC-17457 B72-10076 02
- Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
- Evaluation of jet engine noise
M-FS-21416 B72-10263 03
- Acoustic spectral analysis and testing techniques
NPO-11554 B72-10341 03
- Zeros of certain cross products of Bessel functions of fractional order
LEWIS-12221 B74-10012 03
- ACOUSTO-OPTICS**
Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03
- ACQUISITION**
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
- ACRYLIC ACID**
Shelf and cycle life evaluation of silver-zinc cells
NPO-11258 B70-10214 01
- ACRYLIC RESINS**
Use of acrylic sheet molds for elastomeric products
MSC-15636 B70-10019 08

ACRYLONITRILES

Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
Miniature spray-painting booth
MSC-15811 B70-10549 03
Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
Strengthening lightweight concrete
AEC-10017 B72-10430 04

ACRYLONITRILES

Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04

ACTIVATION

Electroplating on titanium alloy
M-FS-21251 B71-10338 08

ACTIVATION ENERGY

Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
Neutron ages computed from experimental activation data
LEWIS-10949 B70-10557 09

ACTIVITY (BIOLOGY)

Zero-g simulation system for therapeutic application
M-FS-14671 B71-10034 04
A process yields large quantities of pure ribosome subunits
HQ-10662 B72-10653 05

ACTUATION

An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06
Battery activation system
ARC-10832 B74-10056 03

ACTUATORS

Dry-frictional shock absorber
NPO-11212 B70-10040 07
Umbilical disconnect actuator
NPO-11202 B70-10170 07
A long-lived precision switch actuator for controlling pump-piston action
NPO-10757 B70-10279 07
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 B70-10348 07
Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Easy insert, easy release toggle bolt fastener
ARC-10140 B70-10509 07
Concept for a gas operated actuator
NPO-11340 B70-10516 07
Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
High-accuracy detector for laser radar
MSC-13275 B70-10570 01
Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
High intensity heat-pulse source operates without cooling system
ARC-10178 B70-10694 03
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07

High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Remote coupling of air lines
NUC-10225 B71-10101 07
Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
Voltage-controlled oscillator
ARC-10078 B71-10171 01
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
Improved relay chatter detector
NPO-10355 B71-10292 01
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
Electrodynamical actuators for rocket engine valves
ARC-10486 B72-10009 06
Hermetic isolation valves
ARC-10505 B72-10013 06
A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02
Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
Piezoelectric actuator uses sequentially-excited multiple elements: A concept
NPO-11527 B72-10096 01
Squib-actuated disconnect device
NPO-11544 B72-10097 06
Ball detent mechanism
M-FS-21735 B72-10470 07
Magnetic latching valve
NPO-11790 B73-10026 06
Redundant screwjack
JSC-19200 B73-10070 07
Gas-operated actuator: A concept
NPO-11369 B73-10133 03
Thermally responsive mechanical actuator
GSFC-11697 B73-10208 04
Flex flap
ARC-10771 B73-10502 06
Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06
Very high voltage latching relay
LEWIS-12265 B74-10079 01
Piezoelectric relay
GSFC-11627 B74-10089 01

Laser-actuated mechanical device
NPO-13105 B74-10166 03
Laser system to detonate explosive devices
NPO-11743 B74-10194 03
Powered fire nozzle for fast penetration of structures: A concept
MSC-19528 B75-10111 06
Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06

ADAPTERS

Improved shielding termination adapter for electrical cable connectors
MSC-15565 B70-10217 01
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
Hand-held photomicroscopy system
ARC-10468 B72-10190 03

ADAPTIVE CONTROL

New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02
Adaptive position control loop
ARC-10255 B72-10052 02
Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06

ADDING CIRCUITS

High-speed digital plotter
ARG-90001 B71-10049 02
Topological solution of bilateral switching networks
ARC-10294 B72-10055 01
High speed direct-binary to binary-coded-decimal converter and scaler
KSC-10326 B73-10281 02

ADDITIVES

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Silicon solar cells improved by lithium doping
NPO-11390 B70-10585 04
Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01
Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 B71-10357 03
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
Insolubilization process increases enzyme stability
ARC-10314 B71-10443 04
Stabilization of lactate dehydrogenase
ARC-10415 B72-10062 05
Halogenation of microcapsule walls
ARC-10410 B72-10161 04

SUBJECT INDEX

SUBJECT INDEX

Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 B72-10318 04
Gate protective device for SOS array
HQ-10745 B72-10755 01

ADDUCTS

Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04

ADENOSINE DIPHOSPHATE

Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04
Rapid method for determination of antimicrobial susceptibilities pattern of urinary bacteria
GSFC-12039 B75-10253 05

ADENOSINE TRIPHOSPHATE

Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
Automatic bio-sample bacteria detection system
GSFC-11169 B71-10055 04
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
A reusable prepositioned ATP reaction chamber
HQ-10660 B72-10525 05
Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04
Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05

ADHESION

Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08
Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10277 B70-10445 03
Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 B70-10475 04
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Adhesion theory review
AEC-10083 B72-10231 04
High strength, medium density molded foam
AEC-10053 B72-10235 04
Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04

ADHESION TESTS

An improved technique for the use of zinc-rich coatings
KSC-10766 B73-10149 04

ADHESIVE BONDING

Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04

Quick release acoustic sensor holding fixture
MSC-17457 B72-10076 02
Adhesion theory review
AEC-10083 B72-10231 04
Improved electrical spot terminals
NPO-10034 B72-10492 01
Holographic nondestructive testing of laminates
JSC-19107 B73-10108 04
Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
Method of attaching insulation tiles
MSC-12619 B75-10104 04

ADHESIVES

Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03
Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05
Glass-to-metal bonding process improves stability and performance of semiconductor devices
ERC-10264 B70-10477 01
Improved reinforcement for openings in difficult fabrics
MSC-13554 B70-10489 08
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
Improved cover for cadmium sulfide solar cells
LEWIS-11003 B70-10584 01
Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04
Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Strain gage installation manual
M-FS-18822 B70-10715 06
Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04
Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
Limited life item management
M-FS-24020 B71-10196 06

ADIABATIC CONDITIONS

Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 B71-10261 04
Instant acting adhesive system
MSC-13732 B71-10317 04
Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
Protective coating for salt-bath brazing
LEWIS-90255 B71-10381 08
Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 B71-10460 08
Microorganism sample device
LANGLEY-10258 B71-10487 05
New primers for adhesive bonding of aluminum alloys
M-FS-21387 B71-10488 04
Optical bonding agents for severe environments
ARC-10459 B72-10063 04
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
Overlay board for control consoles
ARC-10007 B72-10191 02
A new vibration dampening adhesive
MSC-17668 B72-10284 04
Synthesis of temperature and solvent-resistant polymers
M-FS-20848 B72-10342 04
Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 B72-10346 04
Improved electrical spot terminals
NPO-10034 B72-10492 01
Thermocouple tape
LEWIS-11072 B72-10515 04
A monostress test apparatus
M-FS-24221 B72-10679 06
Vacuum-stripped silicone binder for thermal-control paint
M-FS-21397 B73-10060 04
Semi-organic structural adhesive for aluminum
M-FS-21328 B73-10071 04
Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04
Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
Ultraviolet reflective coating
GSFC-11786 B73-10469 04
Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04
Process for preparing polyimide adhesives
LANGLEY-11397 B75-10257 08
Diamine curing agents for polyurethanes
LANGLEY-11829 B75-10261 08

ADIABATIC CONDITIONS

Atmospheric composition affects heat- and mass-transfer processes
HQ-10271 B70-10094 04
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
Separation of two bodies in space
NPO-10663 B70-10625 09

ADIABATIC FLOW

ADIABATIC FLOW

- Compressed gas handbook
KSC-10662 B71-10272 03
Program to determine radiating,
nonadiabatic, inviscid flow over a blunt body
by the method of integral relations
LANGLEY-11048 B72-10067 09

ADJUSTING

- Adjustable drill bar replaces complex
jigs
MSC-15624 B70-10547 07
Pressurized suits can be fabricated with
adjustable dimensions
MSC-12398 B71-10092 05
Induction brazing manual
M-FS-14924 B71-10123 08
Calibration-interval adjustment indicator
- A concept
M-FS-18693 B71-10309 01
Adjustable locking device
M-FS-21650 B72-10459 07
No-err typing aids
M-FS-15218 B72-10498 07
Bidirectional zoom antenna
GSFC-11862 B74-10257 01
Angular device for optical filters
LANGLEY-11796 B75-10158 03
Variable-volume atomic storage vessel
for hydrogen masers
GSFC-11895 B75-10248 03

ADSORBENTS

- Dynamic technique for measuring
adsorption in a gas chromatograph
JSC-14083 B73-10339 04
Estimating sorber capacity for multiple
contaminants
LANGLEY-11056 B73-10424 04

ADSORPTION

- Atmospheric composition affects heat-
and mass-transfer processes
HQ-10271 B70-10094 04
Combining micro dry column
chromatography and mass spectrometry
NPO-11240 B70-10231 03
Design method for adsorption beds
HQ-10269 B70-10294 04
Direct analysis of hydrogen/deuterium
mixtures: A concept
NPO-11322 B72-10244 03
Dynamic technique for measuring
adsorption in a gas chromatograph
JSC-14083 B73-10339 04
Estimating sorber capacity for multiple
contaminants
LANGLEY-11056 B73-10424 04

AERIAL EXPLOSIONS

- An unconfined, large-volume
hydrogen/air explosion
NUC-11000 B71-10041 03

AERIAL PHOTOGRAPHY

- Cloud-free resolution element statistics
program
GSFC-11494 B71-10463 09
Improved discrimination in photographic
density contouring
JSC-12588 B73-10441 03

AERIAL RECONNAISSANCE

- A rapid, precise, reciprocating-movement
color filter system
GSFC-11255 B72-10497 07
Assessment of water pollution by
airborne measurement of chlorophyll
ARC-10648 B72-10566 04

AEROBES

- Microflora in soils of desert regions
NPO-11215 B70-10253 05

AERODYNAMIC BRAKES

- Integrated flight controller for light
aircraft
ARC-10456 B72-10213 06

AERODYNAMIC CHARACTERISTICS

- Technique for the integral casting of
pressure instrumentation in wind-tunnel
models
LANGLEY-10812 B71-10247 08
Prediction of ducted fan performance
ARC-10615 B72-10064 09
Slot configuration for axial-flow
turbomachinery blades
LEWIS-11572 B72-10484 07
Response of a panel structure to
reverberant acoustic excitation
M-FS-21774 B72-10603 06
Vortex-lattice FORTRAN program for
estimating subsonic aerodynamic
characteristics of complex planforms
LANGLEY-11047 B72-10618 09
Improved method for aerodynamic
analysis of wing-body-tail configurations in
subsonic and supersonic flow
LANGLEY-11305 B73-10470 06
Computation of aerodynamic interference
between lifting surfaces and lift- and
cruise-fans
ARC-10833 B74-10113 09
Investigation of exit-velocity stratification
effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09
Calculation of aerodynamic
characteristics of STOL aircraft
ARC-10882 B74-10221 09

AERODYNAMIC COEFFICIENTS

- Calculation of incompressible fluid flow
through cambered blades
M-FS-20503 B70-10093 06
Vortex-lattice FORTRAN program for
estimating subsonic aerodynamic
characteristics of complex planforms
LANGLEY-11047 B72-10618 09

AERODYNAMIC CONFIGURATIONS

- FORTRAN program for computing
coordinates of circular-arc, single and
tandem, turbine and compressor, blade
sections on a plane
LEWIS-11237 B72-10405 09
Vortex-lattice FORTRAN program for
estimating subsonic aerodynamic
characteristics of complex planforms
LANGLEY-11047 B72-10618 09
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
Computer program for steamtube
curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

AERODYNAMIC DRAG

- NASA-tricot - A lightweight radar
reflective, knitted fabric
LANGLEY-10776 B71-10342 04
Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09
Probe for measuring turbulent real-time
shear-stress waves
ARC-10755 B74-10072 03

AERODYNAMIC FORCES

- Computer program for calculating
aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
A study of high frequency nonlinear
combustion instability in baffled annular
liquid propellant rocket motors
NPO-11800 B71-10532 09

Wind tunnel buffet load measuring
technique

- ARC-10495 B72-10022 06
Integrated flight controller for light
aircraft
ARC-10456 B72-10213 06
Suppression of bending motion in elastic
bodies
XAC-05632 B74-10070 06

AERODYNAMIC HEAT TRANSFER

- Technique for producing wind-tunnel
heat-transfer models
ARC-10658 B72-10349 08

AERODYNAMIC HEATING

- Proceedings of the Third Southeastern
Seminar on Thermal Sciences
M-FS-20627 B70-10135 03
Analysis of surface ablation of
noncharring materials
ARC-10223 B70-10615 09

AERODYNAMIC LOADS

- Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

AERODYNAMIC NOISE

- Comparison of aerodynamic noise from
three nose-cylinder combinations
M-FS-20816 B70-10690 03
A theoretical study of aerodynamic noise
generation
M-FS-24167 B73-10209 03
High-directivity acoustic antenna
ARC-10789 B74-10050 02
Prediction of aircraft noise source and
estimation of noise-level contours
ARC-10880 B75-10060 09
Computer program for the attenuation
of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09
Sound separation probe
LEWIS-12507 B75-10286 03

AERODYNAMIC STABILITY

- Pressure-probe assembly for wind
tunnels
ARC-10569 B72-10248 03
Model optimization using statistical
estimation
M-FS-22873 B74-10189 09
Study of fluid flow by charged particles
ARC-10925 B75-10028 03
Gust alleviation system to improve ride
comfort of light airplanes
LANGLEY-11771 B75-10224 03

AERODYNAMIC STALLING

- Prediction of stall characteristics of
straight wing aircraft
LANGLEY-11013 B71-10501 09

AERODYNAMICS

- Short-duration, transonic flow,
variable-porosity test section
M-FS-20509 B70-10256 03
Variables in turbine erosion
M-FS-18677 B70-10325 03
Optical probing of supersonic
aerodynamic turbulence
M-FS-20686 B70-10665 03
A study of NACA and NASA published
information of pertinence in the design of
light aircraft
LANGLEY-10778 B70-10725 06
Peak structural response to nonstationary
random excitations
NPO-11617 B71-10188 06
Wind tunnel investigations at transonic
Mach numbers
M-FS-20895 B71-10254 06

SUBJECT INDEX

Sensitive holographic detection of small aerodynamic perturbations
 ARC-10422 B72-10209 03
 Ascent control analysis for S-II derivative launch vehicles, digital computer program
 M-FS-24324 B73-10120 09
 A real time moving-scene holographic camera
 M-FS-21087 B73-10421 03
 Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
 LANGLEY-11175 B74-10091 06
 Algorithm for nonlinear stationary Navier-Stokes problem
 ARC-10960 B75-10143 09
 Investigations of multiple jets in a crossflow
 LEWIS-12102 B75-10149 03
 Improved axisymmetric potential flow computer program
 LEWIS-12387 B75-10243 09
 Design procedure for low-drag subsonic airfoils
 LANGLEY-11351 B75-10256 03
 Static aeroelastic program
 LANGLEY-11602 B75-10298 06

AEROSOLS
 TFE coating extends life of flexible metal compressor diaphragm
 LEWIS-11113 B70-10609 07
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04
 Fluidized-bed combustion reduces atmospheric pollutants
 AEC-10085 B72-10431 04
 Analysis of microsize particulates
 ARC-10647 B72-10565 04
 Particulate and aerosol detector
 LANGLEY-11434 B73-10357 04
 Developments in spectrophotometry II: multiple-frequency particle-size spectrometer
 NPO-13606 B75-10333 03
 Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
 NPO-13614 B75-10335 03

AEROSPACE ENGINEERING
 Vibrational transfer functions for base excited systems
 M-FS-21432 B71-10441 09
 Reliability analysis based on operational success criteria
 ARC-10490 B72-10214 09
 Guidelines for fabrication of hybrid microcircuits
 M-FS-21964 B72-10393 01
 Marshall system for aerospace simulation (MARSYAS)
 M-FS-22672 B73-10432 09

AEROSPACE ENVIRONMENTS
 High-temperature electric stator
 LEWIS-10889 B70-10459 01
 Separation of two bodies in space
 NPO-10663 B70-10625 09
 High temperature circuit breaker
 LEWIS-90265 B70-10721 01
 Optical bonding agents for severe environments
 ARC-10459 B72-10063 04
 Composite casting demonstration
 M-FS-21668 B72-10266 04

Investigation of environmental effects on coatings for thermal control
 M-FS-21932 B72-10596 04
 Effects of environmental exposure on cryogenic thermal insulation materials
 LEWIS-12007 B73-10213 04

AEROSPACE INDUSTRY
 Induction brazing manual
 M-FS-14924 B71-10123 08
 Sensitive gaseous hydrogen detection system
 M-FS-21161 B71-10209 04
 Directory of aerospace safety specialized information sources
 LEWIS-12223 B74-10019 03

AEROSPACE MEDICINE
 Instrument detects bacterial life forms
 GSFC-10972 B71-10312 05

AEROSPACE SYSTEMS
 Specification guidelines for hybrid microcircuits
 M-FS-22090 B72-10474 01
 A method for economic evaluation of redundancy levels for aerospace systems
 KSC-10754 B73-10067 09

AEROSPACE VEHICLES
 Fabrication of carbon film composites for high-strength structures
 ARC-10613 B72-10423 04

AEROTHERMOCHEMISTRY
 A program for computing shock-tube gas dynamic properties
 NPO-11068 B70-10133 09
 Aerotherm charring materials ablation computer program
 LEWIS-11854 B73-10065 09

AEROTHERMODYNAMICS
 Variable boundary II heat conduction
 LEWIS-10679 B72-10444 09
 Analyses of unsteady entropic-flow processes
 M-FS-24475 B73-10482 03

AGE FACTOR
 Limited life item management
 M-FS-24020 B71-10196 06

AGGLOMERATION
 Mechanism of operation of the TFE-bonded gas-diffusion electrode
 HQ-10536 B70-10059 01
 Fabrication techniques for thoriated-dispersed /TD/ nickel
 LEWIS-11240 B71-10369 08
 Plasma calcining of pigment particles for thermal control coatings
 M-FS-21267 B72-10320 04

AGGREGATES
 Effect of size on cracking of materials
 NPO-11602 B71-10158 04
 Strengthening lightweight concrete
 AEC-10017 B72-10430 04

AGING (BIOLOGY)
 Acceleration of the aging process by oxygen
 ARC-10928 B75-10030 05

AGING (MATERIALS)
 Failure in glass
 AEC-10088 B72-10364 04

AGING (METALLURGY)
 Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
 M-FS-18790 B70-10213 04
 Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
 M-FS-14385 B70-10243 04

AIR CONDITIONING EQUIPMENT

Mechanism and kinetics of aging in Inconel 718
 M-FS-18775 B70-10261 04
 Thermal treatment and mechanical properties of aluminum-2021
 M-FS-20559 B70-10369 04
 Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
 M-FS-18794 B70-10506 04

AGITATION
 Polymerization of perfluorobutadiene
 NPO-10863 B70-10131 04

AGRICULTURE
 New microwave spectrometer/imager has possible applications for pollution monitoring
 NPO-10535 B70-10187 03
 Multispectral data analysis: LARSYS III
 MSC-14823 B75-10235 03

AIR
 Large-capacity pump vaporizer for liquid hydrogen and nitrogen
 M-FS-20508 B70-10368 07
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05
 Dynamic response of viscous compressible fluids in rigid tubes
 M-FS-20542 B71-10269 03
 Compressed gas handbook
 KSC-10662 B71-10272 03
 Psychrometric chart for physiological research
 ARC-10394 B71-10470 03
 Long-term drift of thermocouples at 1600 K
 LEWIS-11471 B72-10176 01
 Balanced-bellows spirometer
 XAC-01547 B72-10279 05
 Simple turbine balancing test apparatus
 LEWIS-11658 B72-10377 07
 Low frequency sinusoidal pressure generator
 LEWIS-11465 B72-10477 01
 Metabolic simulation chamber
 HQ-10776 B72-10658 05
 Volume measuring system
 MSC-13972 B74-10271 03

AIR CONDITIONING
 Ion-tracer anemometer
 M-FS-21399 B73-10151 04
 A practical solar energy heating and cooling system
 M-FS-22563 B73-10156 05
 Solar residential heating and cooling system
 M-FS-23260 B75-10165 06
 Economical solar-heating or cooling system with new solar-energy concentrators
 NPO-13497 B75-10182 03
 Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03

AIR CONDITIONING EQUIPMENT
 Portable circuit-interruption indicator
 KSC-10546 B71-10246 02
 Automatic air flow control in air conditioning ducts
 GSFC-11445 B72-10490 06
 Self-regenerating desiccant system
 M-FS-23057 B74-10266 07
 Quick-change absorption column
 ARC-10952 B75-10142 03

AIR COOLING

AIR COOLING

- Spinarc gas tungsten arc torch holder
MSC-15646 B70-10041 08
Integrated turbine-compressor provides
air flow for cooling
HQ-10442 B70-10295 07
Water electrolysis module
ARC-10246 B71-10203 03
Turbulent mixing film cooling
correlation
LEWIS-11417 B72-10326 07

AIR DUCTS

- Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Automatic air flow control in air
conditioning ducts
GSFC-11445 B72-10490 06
Noise suppressor
LANGLEY-11141 B74-10261 03

AIR FILTERS

- Filter cassette for high volume air
sampler
LEWIS-11469 B72-10379 03

AIR FLOW

- Laser-Doppler gas velocimeter
M-FS-20583 B70-10143 02
Sinusoidal-pressure generator for testing
dynamic pressure probes
LEWIS-11094 B70-10352 06
Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Prevention of damage to delicate
connectors during mounting of heavy
engines for testing
NUC-10322 B71-10044 06
Microorganism sample device
LANGLEY-10258 B71-10487 05
Reduction of fan noise: A concept
ARC-10312 B72-10040 06
Airflow distribution control for improved
turbine engine performance
LEWIS-11593 B72-10178 07
Turbulent mixing film cooling
correlation
LEWIS-11417 B72-10326 07
Expandable coating cocoon leak
detection system
M-FS-21848 B72-10380 06
Slot configuration for axial-flow
turbomachinery blades
LEWIS-11572 B72-10484 07
Automatic air flow control in air
conditioning ducts
GSFC-11445 B72-10490 06
Indexing film with a fluidic sensor
MSC-14117 B72-10501 02
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
Smoke generator
LANGLEY-11433 B73-10414 06
Combustion products generating and
metering device
GSFC-11095 B74-10036 04
Self-regenerating desiccant system
M-FS-23057 B74-10266 07

AIR INTAKES

- Gas turbine combustor insensitive to
compressor outlet distortion
LEWIS-10286 B70-10312 07
Remote coupling of air lines
NUC-10225 B71-10101 07
Programmed-pressure air supply for
positive-pressure breathing system
ARC-10845 B74-10075 05

AIR JETS

- Flow characteristics of an air jet
impinging on a flat surface
LEWIS-11129 B70-10670 03

AIR LOCKS

- Prediction of gas leakage of
environmental control systems
HQ-10270 B70-10201 05
Air lock mechanism speeds specimen
testing in high-temperature vacuum
furnaces
LANGLEY-10841 B71-10493 07

AIR NAVIGATION

- Computer program to generate attitude
error equations for a gimbaled platform
M-FS-21991 B72-10624 09

AIR POLLUTION

- Mass spectrometer detects high
molecular weight components
HQ-10477 B70-10057 01
Fluid mixing technique increases the gain
and output power of carbon dioxide laser
systems
HQ-10389 B70-10108 03
Self-sealing propellant-actuated device
eliminates atmosphere contamination
NPO-11013 B70-10248 07
Simple chamber facilitates
chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05
Reliability Analysis Model
M-FS-14513 B70-10614 09
Inhibited 1,1,1-trichloroethane replaces
trichloroethylene for degreasing
M-FS-18844 B70-10645 04
Systems approach provides management
control of complex programs
M-FS-20791 B70-10647 06
Exhaust cloud rise and diffusion in the
atmosphere
M-FS-21119 B71-10111 03
Computer-controlled mass spectrometer
for on-line gas analysis
NPO-11427 B71-10191 03
Atmospheric pollution measurement by
optical cross correlation methods - A
concept
M-FS-12078 B71-10224 02
Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
Antipollution system to remove nitrogen
dioxide gas
LEWIS-11297 B71-10393 04
Microorganism sample device
LANGLEY-10258 B71-10487 05
Urban air pollution dispersion model
AEC-10004 B72-10003 03
Wind trajectory tracing for air pollution
studies (AIRPOL)
NPO-11892 B72-10072 09
Fluidic systems may improve combustion
in automotive engines
ARC-10582 B72-10250 06
Filter cassette for high volume air
sampler
LEWIS-11469 B72-10379 03
Fluidized-bed combustion reduces
atmospheric pollutants
AEC-10085 B72-10431 04
Air assist fuel nozzle reduces aircraft gas
turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
Analysis of microsize particulates
ARC-10647 B72-10565 04

Technical management techniques for
identification and control of industrial safety
and pollution hazards

- M-FS-21883 B72-10588 05
Detection of nitric oxide pollution
ARC-10709 B73-10018 03
Gas chromatography of volatile organic
compounds
JSC-14428 B73-10406 04
Improved high volume air sampler
LEWIS-11644 B74-10080 05
Wavelength-selective, sequential
Q-switching laser cavity
LANGLEY-11045 B74-10134 03
Visualization of smoke stack plume
LANGLEY-11675 B74-10208 04
Carbon monoxide detector
M-FS-23090 B74-10268 04
Infrared tunable laser: A concept
ARC-10463 B75-10081 03
Quartz crystal microbalances to measure
wind velocity and air humidity
NPO-13462 B75-10124 03
Improved air atomizing splash-groove
fuel injector reduces pollutant emissions
from turbojet engines
LEWIS-12417 B75-10190 06
Handbook for estimating toxic fuel
hazards
M-FS-21114 B75-10198 04
Gas generators produce hydrogen-rich
fuel
NPO-13342 B75-10203 06
Hydrogen-rich gas generators to reduce
air pollution and improve gasoline
economy
NPO-13560 B75-10208 06
Laser-excited fluorescence for measuring
atmospheric pollution
NPO-13231 B75-10275 02

AIR PURIFICATION

- Atmospheric composition affects heat-
and mass-transfer processes
HQ-10271 B70-10094 04
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Carbon dioxide concentrator
ARC-10245 B72-10194 05
Hydrogen eliminator
ARC-10408 B72-10208 03

AIR SAMPLING

- Filter cassette for high volume air
sampler
LEWIS-11469 B72-10379 03
Particulate and aerosol detector
LANGLEY-11434 B73-10357 04
Combustion products generating and
metering device
GSFC-11095 B74-10036 04
Improved high volume air sampler
LEWIS-11644 B74-10080 05

AIR TRAFFIC

- Aircraft communication via telefacsimile
system
M-FS-20839 B72-10139 02

AIR TRAFFIC CONTROL

- A range-rate extraction unit for
determining Doppler effect
GSFC-10750 B70-10025 01
Very high frequency digital rangine
system
MSC-15763 B70-10284 02
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09

SUBJECT INDEX

Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07

Aircraft communication via telefacsimile system
M-FS-20839 B72-10139 02

Traffic control system and method
GSFC-10087 B74-10024 02

AIRBORNE EQUIPMENT
Airborne spectrometer senses several gases
MSC-13234 B70-10438 03

Lightweight S-band helix antenna
KSC-10392 B70-10538 02

Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02

True airspeed measured by airborne laser Doppler velocimeter
ARC-10763 B73-10506 02

AIRBORNE/SPACEBORNE COMPUTERS
Braid read-only memory
NPO-11570 B73-10136 01

AIRCRAFT
Solid amine compounds as sorbents for carbon dioxide: A concept
ARC-10571 B72-10421 04

AIRCRAFT ACCIDENTS
Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02

Integrated flight controller for light aircraft
ARC-10456 B72-10213 06

AIRCRAFT ANTENNAS
Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01

AIRCRAFT BRAKES
A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06

Antiskid braking system
M-FS-22807 B74-10146 06

AIRCRAFT COMMUNICATION
Aircraft communication via telefacsimile system
M-FS-20839 B72-10139 02

Traffic control system and method
GSFC-10087 B74-10024 02

AIRCRAFT COMPARTMENTS
Counter lung
ARC-10248 B72-10219 05

Leak detector-measurer
M-FS-21761 B73-10203 07

AIRCRAFT CONFIGURATIONS
Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09

Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

AIRCRAFT CONTROL
New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02

Thumb-actuated control device
ARC-10019 B70-10407 01

Aircraft communication via telefacsimile system
M-FS-20839 B72-10139 02

Thrust vector control for V/STOL aircraft
ARC-10788 B74-10049 06

AIRCRAFT DESIGN

A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06

Unified hatch system
MSC-15813 B71-10095 06

Wind tunnel investigations at transonic Mach numbers
M-FS-20895 B71-10254 06

Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07

Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

Radial honeycomb core
ARC-10727 B73-10340 08

Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09

Flight tests of vortex-attenuating splines
LANGLEY-11645 B74-10187 03

Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

Improved axisymmetric potential flow computer program
LEWIS-12387 B75-10243 09

Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03

Static aeroelastic program
LANGLEY-11602 B75-10298 06

AIRCRAFT DETECTION
Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02

Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02

AIRCRAFT ENGINES
Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08

Airflow distribution control for improved turbine engine performance
LEWIS-11593 B72-10178 07

Minimization of jet and core noise by rotation of flow
ARC-10712 B75-10131 06

A new high temperature noble metal thermocouple pairing
LEWIS-12545 B75-10245 03

Improved aircraft reaction nozzles
ARC-10906 B75-10284 06

AIRCRAFT EQUIPMENT
High-powered automatic latching device
MSC-15474 B70-10198 07

Electronic strain-level counter
LANGLEY-10756 B70-10716 02

Survey of aircraft electrical power systems
LEWIS-11678 B72-10383 02

Solid state remote power controllers for 120 VDC power systems
LEWIS-12523 B75-10150 02

AIRCRAFT FUEL SYSTEMS
Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06

Moisture-resistant baffle material for fuel tanks
ARC-10861 B74-10219 04

AIRCRAFT NOISE

AIRCRAFT GUIDANCE

Theory and application of Kalman filtering
M-FS-20491 B70-10309 06

AIRCRAFT HAZARDS

A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
LEWIS-12109 B75-10068 02

AIRCRAFT HYDRAULIC SYSTEMS

Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06

AIRCRAFT INDUSTRY

A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08

Nonlinear damping in structures
M-FS-20701 B70-10341 03

Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 B70-10396 04

New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04

AIRCRAFT INSTRUMENTS

Very high frequency digital rangine system
MSC-15763 B70-10284 02

Roll function in a flight simulator
ARC-10557 B72-10417 02

Reliable low-cost battery voltage indicator for light aircraft and automobiles
LEWIS-12020 B73-10249 01

G-load indicator and warning device for aircraft
ARC-10806 B74-10171 02

Magnetic-heading reference device
LANGLEY-11387 B74-10176 02

Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06

New aircraft instrument indicates turbulence intensity
LANGLEY-11833 B75-10227 03

AIRCRAFT LANDING
Dry-frictional shock absorber
NPO-11212 B70-10040 07

Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01

A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06

AIRCRAFT LAUNCHING DEVICES
Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06

Thrust vector control for V/STOL aircraft
ARC-10788 B74-10049 06

AIRCRAFT MODELS
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09

Optical discriminator system
LANGLEY-11580 B74-10139 03

AIRCRAFT NOISE
A theoretical study of aerodynamic noise generation
M-FS-24167 B73-10209 03

Improved method for design of expansion-chamber mufflers with application to operational helicopter
LANGLEY-11548 B73-10471 03

Prediction of aircraft noise source and estimation of noise-level contours
ARC-10880 B75-10060 09

AIRCRAFT PERFORMANCE

A computer program for calculating design and off-design performance for turbojet and turbofan engines

LEWIS-12010 B73-10232 09

Optical discriminator system

LANGLEY-11580 B74-10139 03

AIRCRAFT PILOTS

Integrated flight controller for light aircraft

ARC-10456 B72-10213 06

AIRCRAFT SAFETY

A new method for measuring slipperiness of airport runways and other paved surfaces

LANGLEY-10795 B70-10712 06

Hydraulic actuator motion limiter ensures operator safety

ARC-10131 B71-10233 07

Laser net - A concept for monitoring wingtip vortices on runways

M-FS-20857 B71-10360 02

Traffic control system and method

GSFC-10087 B74-10024 02

Fail-safe fire detection system

LEWIS-12238 B74-10078 02

Short-range laser obstacle detector

NPO-11856 B74-10101 03

Highly-visible air-sea rescue marker

MSC-12564 B75-10166 05

New aircraft instrument indicates turbulence intensity

LANGLEY-11833 B75-10227 03

AIRCRAFT STABILITY

Suppression of bending motion in elastic bodies

XAC-05632 B74-10070 06

Swashplate feedback control for tilt-rotor aircraft

ARC-10854 B74-10174 06

Gust alleviation system to improve ride comfort of light airplanes

LANGLEY-11771 B75-10224 03

AIRCRAFT STRUCTURES

Torch kit for welding in difficult areas

MSC-15704 B71-10070 08

Process for producing molybdenum foil and collapsible tubing

GSFC-10008 B71-10073 08

Peak structural response to nonstationary random excitations

NPO-11617 B71-10188 06

Thermally stable polyimides from solutions of monomeric reactants

LEWIS-11325 B71-10442 04

FORTTRAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane

LEWIS-11237 B72-10405 09

Lightweight inflatable material with low permeability

LANGLEY-10928 B73-10400 04

Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow

LANGLEY-11305 B73-10470 06

Flex flap

ARC-10771 B73-10502 06

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow

LANGLEY-11175 B74-10091 06

Controlled intermittent interfacial bond concept for composite materials

LANGLEY-11628 B74-10264 04

Plastic covering on airfoil structure provides smooth uninterrupted surface

MSC-12631 B74-10270 08

AIRFOIL PROFILES

FORTTRAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane

LEWIS-11237 B72-10405 09

AIRFOILS

Computing incompressible laminar and turbulent boundary layer formation

LEWIS-11190 B71-10155 09

Flex flap

ARC-10771 B73-10502 06

Airfoil disperses smokestack effluents upward

LANGLEY-11669 B75-10074 06

Design procedure for low-drag subsonic airfoils

LANGLEY-11351 B75-10256 03

AIRFRAME MATERIALS

A self-supporting strain transducer

LANGLEY-11263 B73-10201 06

AIRFRAMES

Fabrication of carbon film composites for high-strength structures

ARC-10613 B72-10423 04

Suppression of bending motion in elastic bodies

XAC-05632 B74-10070 06

Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications

LEWIS-12514 B75-10151 06

AIRLOCK MODULES

Airlock caution and warning system

M-FS-21576 B72-10467 02

AIRPORTS

Very high frequency digital rangine system

MSC-15763 B70-10284 02

Automatic lightning location system

AEC-10077 B72-10372 02

AIRSPEED

Laser Doppler instrument measures fluid velocity without reference beam

XAC-10770 B71-10120 03

True airspeed measured by airborne laser Doppler velocimeter

ARC-10763 B73-10506 02

ALBUMINS

Stabilization of lactate dehydrogenase

ARC-10415 B72-10062 05

ALCOHOLS

New type of trifunctional alcohol

NPO-10714 B72-10553 04

Dichromated-gelatin hologram process for improved optical quality

M-FS-23170 B75-10099 03

ALDEHYDES

Rapid analytical determination of glutaraldehyde concentrations

ARG-10413 B71-10047 05

ALGAE

Microflora in soils of desert regions

NPO-11215 B70-10253 05

Assessment of water pollution by airborne measurement of chlorophyll

ARC-10648 B72-10566 04

Dye laser remote sensing of marine plankton

LANGLEY-11382 B73-10359 05

ALGEBRA

Exhaust cloud rise and diffusion in the atmosphere

M-FS-21119 B71-10111 03

ALGOL

Condensation of wet vapors in turbines

NPO-10773 B70-10613 09

ALGORITHMS

Block encoders for Reed-Muller codes

NPO-10629 B70-10051 01

Automatic data generation scheme for finite-element method /FEDGE/ - Computer program

NPO-11069 B70-10067 09

Rapid method for interconversion of binary and decimal numbers

ARC-10159 B70-10496 09

Digital demodulation with data subcarrier tracking

NPO-10858 B70-10518 02

Overlapped conic simulation of three-body trajectories

MSC-13460 B70-10536 03

The determination of stability domains for nonlinear dynamical systems

M-FS-14832 B70-10539 03

Simple data-smoothing and noise-suppression technique

M-FS-20803 B70-10627 06

Global search algorithm for optimal control

ARC-10359 B70-10637 09

Multi-dimensional real Fourier transform

NPO-11648 B71-10133 09

Method for constructing periodic orbits in nonlinear dynamic systems

M-FS-14654 B71-10151 09

A topological approach to computer-aided sensitivity analysis

ARC-10214 B71-10164 02

Pattern recognition technique

NPO-11337 B71-10187 06

Efficient digital comparison technique for logic circuits

M-FS-21080 B71-10218 02

Battery simulation program

NPO-11580 B71-10250 09

NASTRAN computer system level 12.1

GSFC-10991 B71-10285 09

A continued fraction generator for smooth pulse sequences

MSC-13697 B71-10304 01

Computation of group table alphanumeric display

LEWIS-11346 B71-10373 09

Error evaluation for difference approximations to ordinary differential equations

M-FS-21610 B71-10423 09

Algorithm for Liapunov stability analysis

ARC-10498 B72-10023 09

Techniques for improving reliability of computers

M-FS-21326 B72-10109 02

High speed sequential decoder

ARC-10657 B72-10568 09

Automatic computer subprogram selection from application-program libraries - ALTLIB

LANGLEY-11124 B72-10607 09

Optimizing designs of two-level factorial experiments given partial prior information (NAMER)

LEWIS-11708 B72-10726 09

Computer-controlled vibration testing

NPO-11612 B73-10138 02

Theory and calculus of cubical complexes

NPO-11491 B73-10165 09

SUBJECT INDEX

A new algorithm for finding survival coefficients employed in reliability equations
M-FS-22295 B73-10256 09

Low-cost coding techniques for digital fault diagnosis
NPO-11701 B73-10344 09

Method of identifying clusters representing statistical dependencies in multivariate data
ARC-10744 B75-10140 09

Algorithm for nonlinear stationary Navier-Stokes problem
ARC-10960 B75-10143 09

Fast Fourier transformation computer using fast counters
NPO-13110 B75-10175 02

Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
MSC-14866 B75-10236 03

Electrocardiogram signal analyzer
MSC-12710 B75-10269 05

ALIGNMENT

Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08

A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02

Improved manual radio frequency direction finder
M-FS-20507 B70-10422 02

Laser wavelength selector and output coupler
ERC-10248 B70-10507 02

Performance evaluation system for inertial navigation equipment
MSC-13542 B71-10087 02

Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06

Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02

Rotary stripper for shielded and unshielded FCC
M-FS-20119 B71-10465 08

Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07

Optical alignment of electrodes on electrical discharge machines
XAC-09489 B72-10036 07

Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07

No-err typing aids
M-FS-15218 B72-10498 07

Improved optical filters for automated visual inspection
HQ-10720 B72-10521 03

Precision machining of steel decahedrons
M-FS-21361 B72-10597 07

Measurement of dimensions and alignment with optical instruments
M-FS-22168 B73-10061 06

LEAPS (Laser electro-optical alignment pole for surveying)
GSFC-11262 B73-10122 02

Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06

Alignment fixture for precision cutting of printed-wiring boards
LANGLEY-11658 B74-10290 01

Angular device for optical filters
LANGLEY-11796 B75-10158 03

Visual alignment aid
LANGLEY-11842 B75-10228 03

ALIPHATIC COMPOUNDS

Polymers used to absorb fats and oils:
A concept
NPO-11609 B74-10210 05

ALKALI METALS

High-temperature electric stator
LEWIS-10889 B70-10459 01

Metal-to-ceramic seals - A literature survey
NPO-11430 B71-10116 08

Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04

ALKALIES

Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01

Electroplating on titanium alloy
M-FS-21251 B71-10338 08

ALKALINE BATTERIES

Improved alkaline electrochemical cell
GSFC-10792 B70-10153 01

Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01

Electrodes for sealed secondary batteries
ARC-10238 B72-10050 02

ALKALINE EARTH OXIDES

Prevention of cathode damage from positive ion bombardment
HQ-10688 B72-10654 03

ALKYL COMPOUNDS

Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02

Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04

Improved fire-resistant coatings
GSFC-10072 B71-10198 04

ALLOCATIONS

Multiplexing technique for computer communications via satellite channels
ARC-10879 B75-10133 09

ALLOYS

Low-cost orbiting grinder for cutting ducts
M-FS-20684 B70-10126 07

Diffusion technique for lithium-doped silicon
GSFC-10827 B70-10148 01

Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03

Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06

Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01

Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01

Nondestructive spot tests allow rapid identification of metals
LANGLEY-10539 B70-10520 04

Extended-life magnetic recording heads
GSFC-10097 B70-10521 01

Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01

Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08

ALTERNATING CURRENT

Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08

Strain gage performance above 1033 K
M-FS-18831 B71-10225 04

Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08

Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04

Cast segment evaluation
M-FS-21354 B71-10363 08

Exothermic brazing units
M-FS-21435 B71-10467 08

An empirical relationship for the penetration of 1 to 3 MeV electrons
LEWIS-11495 B72-10144 04

Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 B72-10318 04

ALLYL COMPOUNDS

Reverse-osmosis membranes by plasma polymerization
ARC-10696 B72-10710 04

ALPHA PARTICLES

Neutron-image intensifier
ARG-10249 B70-10240 03

Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01

Safety monitoring system for radioisotope thermoelectric generators
NPO-13285 B73-10352 02

ALPHANUMERIC CHARACTERS

Pattern recognition technique
NPO-11337 B71-10187 06

Solid-state data interpretation system - A concept
M-FS-20587 B71-10366 02

Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09

FORTTRAN 4 digital program changer
MSC-17567 B71-10448 09

Alphanumeric character generator for oscilloscope
GSFC-11582 B73-10370 02

ALTERNATING CURRENT

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01

Slow-speed drives for miniature devices
NPO-10700 B70-10007 02

Electrodynamical induction flowmeter
HQ-10230 B70-10024 01

High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01

A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01

Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01

Solid-state ac-to-dc converter
HQ-10545 B70-10147 02

A battery simulator
KSC-10172 B70-10340 01

Transistor current and voltage limiting switch
NPO-11166 B70-10414 01

Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02

A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01

ALTIMETERS

Metal detector system
ARC-10265 B70-10511 01
Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
Design and evaluation of brushless electrical generators
LEWIS-10124 B70-10554 02
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
Electronic strain-level counter
LANGLEY-10756 B70-10716 02
High temperature circuit breaker
LEWIS-90265 B70-10721 01
A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02
Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01
High-power ac/dc variable load simulator
MSC-14788 B75-10108 02

ALTIMETERS

Laser altimeter
M-FS-13691 B70-10196 02

ALTITUDE CONTROL

Spin vector control of a spinning space station
M-FS-21333 B71-10296 09

ALTITUDE SIMULATION

Continuous-flow variable-density wind tunnel facilities
NPO-11287 B72-10078 06

ALUMINUM

Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07
Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
Spinarc gas tungsten arc torch holder
MSC-15646 B70-10041 08
Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
Thermoelectric radiometer
ARC-10138 B70-10056 02
Stranded superconducting cable of improved design
ARG-90108 B70-10070 01
Phenolic cutter for machining foam insulation
M-FS-14170 B70-10089 07
Passive heat transfer control
HQ-10041 B70-10111 03
Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08
Improved electron-beam welding technique
M-FS-20714 B70-10127 08
Piezoelectric transducer
HQ-10548 B70-10157 01

Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 B70-10183 04
Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
Improved heat shield/radiator
NPO-11105 B70-10318 03
Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
NUC-10227 B70-10356 03
Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 B70-10395 06
Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
Improved electron beam welding technique
M-FS-20753 B70-10412 08
High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08
Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08
Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
Strain gage installation manual
M-FS-18822 B70-10715 06
Hydraulically operated tilt table
M-FS-21047 B71-10024 05
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04

SUBJECT INDEX

Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04
Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08
Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07
Portable lightweight bandsaw
M-FS-16927 B71-10237 07
Plating by glass-bead peening
GSFC-11163 B71-10256 08
Technique for in-place welding of aluminum backed up by a combustible material
LEWIS-11328 B71-10257 08
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
A study of nitride devices for computer memory applications
M-FS-20971 B71-10350 03
Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
Aluminum foil interconnects for solar cell panels
ARC-10374 B72-10058 08
Optical bonding agents for severe environments
ARC-10459 B72-10063 04
Quick release acoustic sensor holding fixture
MSC-17457 B72-10076 02
Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
Explosive cord
M-FS-21928 B72-10293 08
Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04
High intensity solar cell radiometer
LEWIS-11549 B72-10480 01
Sputter etching of hemispherical bearings
HQ-10712 B72-10534 08
High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04
Improved electrodes for skin contacts
M-FS-21926 B72-10698 05

SUBJECT INDEX

Thin-film ultraviolet detector and spectrometer
NPO-11432 B72-10701 03
Reduction of porosity in aluminum weldments
MSC-14198 B72-10734 08
Semi-organic structural adhesive for aluminum
M-FS-21328 B73-10071 04
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04
Applying high-emittance and solar-absorptance coating to aluminum
LANGLEY-10151 B73-10238 04
Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
Grain refinement control in gas-shielded arc welding of aluminum tubing
JSC-19095 B73-10508 08
In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04
Explosive welding technique for joining aluminum and steel tubes
MSC-14721 B74-10272 08
Industrial laser welding: An evaluation
M-FS-23237 B75-10267 08

ALUMINUM ALLOYS

Testing filamentary composites
HQ-10268 B70-10004 04
Unidirectional composite stiffening
HQ-10266 B70-10054 04
A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03
Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 B70-10210 04
Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01
High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04
Heat-rejection windows for telescopes
M-FS-20634 B70-10386 04
Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 B70-10396 04

Strain compatibility tests for sprayed foam cryogenic insulation
M-FS-16063 B70-10423 04
High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08
Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10277 B70-10445 03
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04
Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
The water-cryogen heat exchanger
NUC-11029 B70-10591 03
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08
Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 B71-10355 05
Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
New primers for adhesive bonding of aluminum alloys
M-FS-21387 B71-10488 04
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06
Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04
Analysis of thermal stress and metal movement during welding
M-FS-20984 B72-10333 04

ALUMINUM COMPOUNDS

Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 B72-10346 04
Boron aluminum composite structures
M-FS-21571 B72-10386 04
Oxidation resistant, thoria-dispersed nickel-chromium-aluminum alloy
LEWIS-11541 B73-10077 04
Materials data handbooks on aluminum alloys
M-FS-22798 B73-10373 04
Welding high-strength aluminum alloys
M-FS-22918 B73-10481 04
X-ray opaque additive for inspection of weld joints
M-FS-22896 B73-10528 08
Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04
In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04
High-strength rivet does not require aging
MSC-19301 B75-10044 06
Aluminum alloys with improved strength
M-FS-23239 B75-10200 04
Biaxial compression test technique
MSC-14883 B75-10319 08

ALUMINUM CHLORIDES

Stabilization of porous glass reverse-osmosis membranes
ARC-10646 B72-10309 04
Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04
Al/Cl₂ molten salt battery
HQ-10696 B72-10527 01

ALUMINUM COATINGS

Evaluation of two designs for cryogenic insulation
M-FS-14740 B70-10415 03
Improved heat-resistant garments
MSC-12109 B70-10544 08
Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04
Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04
Superior cryogenic insulation developed
M-FS-21560 B72-10187 04
Selective coating for collecting solar energy on aluminum
M-FS-22562 B73-10527 04
Inexpensive lightweight mirror
MSC-14615 B74-10155 05

ALUMINUM COMPOUNDS

New materials for fireplace logs
M-FS-21363 B71-10339 04
Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04

ALUMINUM FLUORIDES

Electron beam chemistry produces high purity metals

LEWIS-11639 B72-10439 04

A visual-display and storage device

GSFC-10901 B72-10647 02

Boron-10 loaded inorganic shielding material

M-FS-22280 B72-10740 04

Process for fabrication of stabilized aluminum phosphate fibers

LANGLEY-11526 B74-10185 08

ALUMINUM FLUORIDES

Improved elastomer for use with oxygen difluoride

ARC-10528 B72-10027 04

ALUMINUM HYDRIDES

Preparation of highly fluorinated diols containing ether linkages.

NPO-10768 B70-10353 04

ALUMINUM NITRIDES

Aluminum nitride insulating films for MOSFET devices

NPO-11859 B72-10425 04

Thin-film ultraviolet detector and spectrometer

NPO-11432 B72-10701 03

ALUMINUM OXIDES

Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept

NPO-10755 B70-10090 07

Self-lubricating fluorine shaft seal material

HQ-10112 B70-10222 04

Fabrication of hollow ball bearings by diffusion welding

LEWIS-11026 B70-10331 08

Readily fiberizable glasses having a high modulus of elasticity

HQ-10593 B70-10432 04

High-temperature, long-term drift of platinum-rhodium thermocouples

LEWIS-11111 B70-10552 01

Filled polymers for bearings and seals used in liquid hydrogen

LEWIS-10887 B70-10573 04

Advances in electrometer vacuum tube design

GSFC-10729 B70-10696 01

Ceramic wiring board increases packaging density of electronic modules

MSC-13497 B71-10084 01

Self-replaceable thermocouple for molten steel bath - A concept

NUC-10223 B71-10125 01

New understanding of fiber composite materials

NPO-11605 B71-10161 04

Precision calibration and reference voltage source for data acquisition systems

M-FS-20950 B71-10298 02

Energy levels and transition probability matrix elements of ruby for maser applications

NPO-11687 B71-10308 09

Superconductor transition temperatures study

M-FS-21247 B71-10385 03

Improved electron emitter

LEWIS-10814 B71-10388 03

Beryllium thin films for resistor applications

ARC-10485 B72-10021 01

Improved elastomer for use with oxygen difluoride

ARC-10528 B72-10027 04

Low temperature catalytic ignition of hydrogen and oxygen

ARC-10492 B72-10127 03

Long-term drift of thermocouples at 1600 K

LEWIS-11471 B72-10176 01

Improved high voltage insulator for use in vacuum

LEWIS-11401 B72-10181 01

Floating zone process for drawing small diameter fibers of refractory materials

LEWIS-11380 B72-10491 04

Development of chip passivated monolithic complementary MISFET circuits with beam leads

M-FS-22264 B72-10696 01

Eutectic bonding of sapphire to sapphire

GSFC-11577 B73-10284 08

Improved masers for X-band and Ku band

NPO-11437 B73-10293 02

Single crystal tubes of beta alumina

LEWIS-11844 B73-10316 04

New concept in brazing metallic honeycomb panels

LANGLEY-10957 B73-10358 08

New standoffs provide high-reliability component mounting for printed wiring boards

LANGLEY-11176 B73-10512 01

ALUMINUM SILICATES

Ceramic backup ring prevents undesirable weld-metal buildup

NUC-10357 B71-10117 08

AMBIENCE

Ambient-light-absorbing screen for front projection

ERC-90017 B70-10472 03

Adjustable support spring

ARC-10203 B70-10636 07

Improved transducer for squeeze-film bearings

M-FS-20826 B71-10140 07

Remote control radioactive-waste removal system uses modulated laser transmitter

LANGLEY-10311 B71-10343 03

Cable insulation cut-through tester

M-FS-20114 B71-10459 08

Aircrew oxygen system

ARC-10247 B72-10195 05

Counter lung

ARC-10248 B72-10219 05

AMBIENT TEMPERATURE

Improved calibration of accelerometers at temperatures down to -450 degrees F

M-FS-18561 B70-10173 03

Large-capacity pump vaporizer for liquid hydrogen and nitrogen

M-FS-20508 B70-10368 07

Vacuum-jacketed rotary joints for pipelines

KSC-10519 B71-10018 07

Improved epoxy resin for constructing cryogenic filament-wound pressure vessels

LEWIS-11261 B71-10261 04

Polymerization of perfluorobutadiene at near-ambient conditions

NPO-10447 B71-10291 04

Development of conformal coating materials

M-FS-21393 B71-10483 04

Temperature compensation of light-emitting diodes

ARC-10467 B72-10218 01

High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications

LEWIS-11634 B72-10344 04

Accurate measurement of gas volumes by liquid displacement

ARC-10723 B72-10699 03

AMBIGUITY

Digital decoder for phase-delay coded data

GSFC-10894 B71-10345 01

AMINES

New hyperthermal thermosetting heterocyclic polymers

LANGLEY-10221 B70-10403 04

Solvation agent for disulfide precipitates from inhibited glycol-water solutions

MSC-13695 B71-10331 04

Halogenation of microcapsule walls

ARC-10410 B72-10161 04

Fire retardant polyisocyanurate foam

ARC-10280 B72-10269 04

Solid amine compounds as sorbents for carbon dioxide: A concept

ARC-10571 B72-10421 04

Reverse-osmosis membranes by plasma polymerization

ARC-10696 B72-10710 04

AMINO ACIDS

Automatic amino acid analyzer

ARC-10215 B71-10165 04

Insolubilization process increases enzyme stability

ARC-10314 B71-10443 04

AMMETERS

Dual current readout for precision plating

MSC-15673 B70-10392 01

AMMONIA

Growth of single-crystal gallium nitride

ERC-10301 B70-10473 03

Determination of nitrogen in titanium nitride

LEWIS-11046 B70-10588 04

Crystal growing by electrodeposition from dense gaseous solutions

NPO-10440 B70-10676 04

Performance map of a heat pipe charged with ammonia

NPO-11454 B70-10726 03

Antipollution system to remove nitrogen dioxide gas

LEWIS-11297 B71-10393 04

AMMONIUM COMPOUNDS

Suppression of zinc dendrites in zinc electrode power cells

HQ-10550 B70-10434 02

Low temperature scale for a 1 to 20 degree Kelvin region

AEC-10007 B72-10146 03

Initiation of polymerization by tetrabutylammonium p-lithiophenoxide

p-lithiophenoxide

ARC-10553 B72-10223 04

Silver stain for electron microscopy

ARC-10661 B72-10415 05

Radiation-induced nickel deposits

LEWIS-10965 B72-10456 04

AMMONIUM PERCHLORATES

Flame zone of a composite propellant expanded by a laser source

LANGLEY-10660 B71-10335 03

AMMONIUM PHOSPHATES

Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere

MSC-13571 B70-10540 04

SUBJECT INDEX

Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08

Nonflammable potting, encapsulating and/or conformal coating compound
MSC-13499 B72-10337 04

AMMUNITION
Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04

A four-panel enclosure protects from explosion
M-FS-21847 B72-10613 06

AMORPHOUS MATERIALS
Multiport semiconductor devices
ERC-10293 B70-10448 01

Photoemissive coating
M-FS-22003 B72-10638 08

AMOUNT
CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09

AMPLIFICATION
Piezoelectric transducer
HQ-10548 B70-10157 01

Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01

Design procedure for improved active filters
M-FS-20445 B70-10238 02

Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03

Fabrication of electroacoustic RF amplifiers
ERC-10266 B70-10460 01

Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03

Improved modified turnstile antenna
MSC-12209 B70-10482 01

Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01

High-accuracy detector for laser radar
MSC-13275 B70-10570 01

Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02

Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01

Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02

EKG isolator
M-FS-21236 B71-10124 05

Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06

Multifunction audio digitizer for communications systems
MSC-13855 B71-10318 02

RF-controlled implantable solid state switch
ARC-10136 B71-10426 01

Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01

Differential input preamplifier
ARC-10489 B72-10165 01

Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02

A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01

Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01

Strain gauge sensitivity improved by using a composite beam
NPO-13170 B74-10297 07

AMPLIFIER DESIGN
Low distortion automatic phase control circuit
M-FS-21671 B72-10682 02

AMPLIFIERS
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01

Radio frequency baseband recording technique
HQ-10317 B70-10069 02

Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01

Precise audio-frequency markers for nuclear magnetic resonance spectra
NPO-11147 B70-10086 02

Acoustic vibration test detects intermittent electrical discontinuities
MSC-15158 B70-10118 01

Highly stable biased amplifier and stretcher system
ARG-10354 B70-10142 01

Testing device for verifying the performance of digital recorders
KSC-10300 B70-10149 01

Precision full-wave rectifier
ARC-10101 B70-10161 02

Audio signal processor
MSC-12223 B70-10180 01

Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 B70-10230 09

Design procedure for improved active filters
M-FS-20445 B70-10238 02

Noncontacting-optical-strain device
NPO-10778 B70-10292 03

Simple, accurate temperature-measuring instrument
MSC-12327 B70-10303 01

Two techniques for digital filter design
M-FS-20015 B70-10314 01

Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 B70-10335 01

Electronically controlled motor drive system has ultra-high reliability and long lifetime
GSFC-10065 B70-10346 02

Artificial-feedback system
GSFC-10324 B70-10421 02

Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02

Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02

Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 B70-10515 01

Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01

Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01

AMPLIFIERS

Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01

Digital-voltage curve generator
NPO-11104 B70-10590 02

Laser beam hydrocarbon detector
ARC-10156 B70-10631 03

A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02

Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02

Technique for lowering the noise figure in RF amplifiers
HQ-10435 B70-10650 01

Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01

Automatic, computerized testing of bolts
NPO-11090 B70-10657 06

Method of stabilizing flueric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07

Electronic strain-level counter
LANGLEY-10756 B70-10716 02

Measurement of surface roughness slope
LEWIS-11080 B70-10722 01

Conductive elastomeric extensometer
M-FS-21049 B71-10032 01

Active parallel redundancy for electronic integrator-type control circuits
NUC-10231 B71-10040 01

Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 B71-10069 01

Wein bridge oscillator circuit
MSC-13686 B71-10089 01

Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02

Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01

High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01

Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03

Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07

Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03

Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02

Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05

Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03

Voltage-controlled oscillator
ARC-10078 B71-10171 01

A 20 kHz power oscillator
LEWIS-11319 B71-10174 01

Wall attachment, flueric crossover "AND" gate
XLA-07391 B71-10178 07

Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01

AMPLITUDE MODULATION

Solar cell power scanner
LEWIS-11280 B71-10223 02
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01
Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
Pressure transducer with four-decade dynamic range
KSC-10384 B71-10323 01
Communications system for zero-g simulation tests in water
M-FS-21357 B71-10344 02
Waveshaping electronic circuit
M-FS-14916 B71-10429 01
Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Solar experiment alignment system
ARC-10471 B72-10020 03
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01
Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03
Gas leak-detection system
NPO-11405 B72-10087 03
Control of acceleration in sine/random vibration tests
NPO-11482 B72-10091 02
Soldering iron temperature indicator
NPO-11545 B72-10098 02
Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02
Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
A compact spectroradiometer for solar simulator measurements
HQ-10683 B72-10327 03
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
A Compton scatter attenuation gamma ray spectrometer
M-FS-21441 B72-10487 03
Universal dc signal conditioner
MSC-17526 B72-10510 02
An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03
Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01

Operational slope-limiting circuit
NPO-11773 B73-10346 01
Meter circuit for tuning RF amplifiers
NPO-11865 B73-10389 02
Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01
AMPLITUDE MODULATION
General technique for measurement of refractive index variations
HQ-10359 B70-10064 01
Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Antenna-array, phase quadrature tracking system
MSC-12205 B70-10095 02
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02
Directional coupler for optical waveguides
ERC-10094 B70-10381 03
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
Two-carrier command modulation system
NPO-11548 B73-10273 02
RF to digital converter
JSC-14419 B73-10306 02
Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
HQ-10844 B75-10087 03
AMPLITUDES
Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Portable vibration exciter
KSC-10069 B70-10339 07
Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06
Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 B70-10508 01
Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
Multiloop distributed RC active networks
ARC-10200 B71-10177 01
Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
Improved relay chatter detector
NPO-10355 B71-10292 01
Planet geometric center tracker
ARC-10084 B71-10445 02

SUBJECT INDEX

Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Improved audio reproduction system
ARC-10404 B72-10059 01
Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
Selecting digital filters
M-FS-20933 B72-10156 01
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 B72-10209 03
Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
Low frequency sinusoidal pressure generator
LEWIS-11465 B72-10477 01
Computer method for identification of boiler transfer functions
LEWIS-11808 B72-10582 09
Electronic high pass filter
LEWIS-11600 B74-10083 02
Techniques for decoding speech phonemes and sounds: A concept
GSFC-11898 B75-10086 02
AMPOULES
Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06
Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
MSC-17153 B71-10097 04
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03
ANAEROBES
Microflora in soils of desert regions
NPO-11215 B70-10253 05
Reusable anaerobic system for microbiological studies - A concept
MSC-13920 B71-10495 05
ANALOG CIRCUITS
Analysis and optimization of an omnidirectional direction-finding system
M-FS-14346 B70-10112 02
Digital phase-modulation/multiplex system
NPO-11338 B70-10355 02
Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 B70-10515 01
Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
Time-based priority selection for analog circuits
M-FS-24242 B73-10154 02

SUBJECT INDEX

Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06

ANALOG COMPUTERS

High-resolution spectral analysis
NPO-10748 B70-10039 01
Artificial-feedback system
GSFC-10324 B70-10421 02
Digital simulation program improved
M-FS-01504 B70-10705 09
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Efficient digital comparison technique for logic circuits
M-FS-21080 B71-10218 02
Stored program concept for analog computers
M-FS-20874 B71-10240 09
Virtual-image display system for flight simulators
ARC-10175 B71-10427 03
Metabolic breath analyzer
M-FS-21415 B71-10466 05
Overlay board for control consoles
ARC-10007 B72-10191 02
A continuous physiological data collector
M-FS-20835 B72-10402 05
Simultaneous processing of vibration test data
NPO-11616 B73-10139 01

ANALOG DATA

Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
Low cost, logarithmic mass flow computer
LEWIS-11001 B71-10407 06
Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02
Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
Automatic PCM guard-band selector and calibrator
KSC-10812 B73-10510 02
Isolated transfer of analog signals
LANGLEY-11312 B73-10513 02
Continuous Fourier transform system
ARC-10466 B74-10170 02
Synchronized frequency transposer
GSFC-11763 B74-10256 01

ANALOG SIMULATION

Stored program concept for analog computers
M-FS-20874 B71-10240 09
Third order digital-to-analog converter
MSC-12458 B72-10030 02
Optical communication channel simulator system
GSFC-11877 B74-10258 01

ANALOG TO DIGITAL CONVERTERS

Telemetry receiver
NPO-10746 B70-10008 02
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
High-resolution spectral analysis
NPO-10748 B70-10039 01
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Pulse-rate averaging circuit
GSFC-10718 B70-10370 01
Multifunction audio digitizer for communications systems
MSC-13855 B71-10318 02
High efficiency telemetry method
NPO-10388 B71-10371 02
Solid state television camera has no imaging tube
M-FS-21553 B72-10254 02
A simple dead-reckoning navigational system
M-FS-21165 B72-10409 02
An improved data transfer and storage technique for hybrid computation
M-FS-22043 B72-10680 02
Frequency-to-amplitude converter: A concept
MSC-12395 B72-10729 01
Digital TV image enhancement system
GSFC-11256 B73-10285 02
Versatile, analog-to-digital, power-regulator controller
NPO-13178 B73-10467 02
Decimal digit generator for commutated data: A Concept
ARC-10856 B74-10120 01
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
Computer program for analysis of vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
A hybrid general-purpose bit synchronizer
MSC-14330 B75-10169 02
Position sensing materials wound on a reel
GSFC-11902 B75-10249 07
Highly stable analog-to-digital converter
NPO-13385 B75-10277 01
Delay-lock-loop code-correlation synchronizer
GSFC-11868 B75-10291 02

ANALOGS

FORTAN program for generating a two-dimensional orthogonal mesh between two arbitrary boundaries
LEWIS-11863 B72-10753 09

ANALYSIS (MATHEMATICS)

Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 B70-10241 08
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
Indefinite integrals of products of some exponential and trigonometric functions
LEWIS-11493 B72-10225 09
Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06

ANALYTIC GEOMETRY

Roll function in a flight simulator
ARC-10557 B72-10417 02
Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
Generalized current distribution rule
LANGLEY-11565 B74-10093 02
Analysis of orbital heat transfer
ARC-10844 B74-10116 03
Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03
Eigenfunction solution of damped structural systems: DAMP
NPO-13480 B74-10169 09
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09
Eigenvalue algorithm based on a combined Sturm sequence and inverse iteration technique (EASI)
NPO-13368 B74-10215 09
Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09
Combined effects of a converging beam of light and mirror misalignment in Michelson interferometry
ARC-10889 B74-10246 03
Volume measuring system
MSC-13972 B74-10271 03
Optical design computer program: LENS II
GSFC-11951 B75-10250 03
Computer integration of hydrodynamics equations for heat pipes
GSFC-12009 B75-10252 09
Electrocardiogram signal analyzer
MSC-12710 B75-10269 05
A study of accuracy in selected numerical-analysis integration techniques
MSC-14802 B75-10273 09
General optics evaluation program (GENOPTICS)
GSFC-12038 B75-10294 09
Static aeroelastic program
LANGLEY-11602 B75-10298 06
Power spectrum analysis of staggered quadruphase-shift-keyed signals
MSC-14865 B75-10318 09
Minimization search method for data inversion
NPO-99999 B75-10338 09

ANALYTIC FUNCTIONS

Chebyshev minimax control theory
M-FS-20639 B70-10315 03
Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05

ANALYTIC GEOMETRY

New model performance index for engineering design of control systems
HQ-10520 B70-10293 06

ANALYTICAL CHEMISTRY

SUBJECT INDEX

ANALYTICAL CHEMISTRY

Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04
Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
Fast peak selector for mass spectrometer
LANGLEY-10268 B71-10009 04
Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05

ANALYZERS

Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Automatic amino acid analyzer
ARC-10215 B71-10165 04
A real-time statistical time-series analyzer
MSC-12428 B71-10276 02
Improved charged-particle analyzer - A concept
XAC-05506 B71-10283 03
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
High-temperature-radiation analyzer
ARC-10565 B73-10017 03
Programmable random interval generator
JSC-14131 B73-10367 02
Pseudotachometer for mobile metabolic analyzer
M-FS-22909 B73-10480 02
Visualization of smoke stack plume
LANGLEY-11675 B74-10208 04
Micrometeoroid velocity-and-trajectory analyzer
GSFC-11889 B74-10286 01

ANCHORS (FASTENERS)

Easy insert, easy release toggle bolt fastener
ARC-10140 B70-10509 07
Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06

ANEMIAS

Improved design of electrophoretic equipment for rapid sickle-cell-anemia screening
GSFC-11794 B73-10225 02

ANEMOMETERS

Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07
Anemometer calibrator
M-FS-21424 B71-10519 03
Ion-tracer anemometer
M-FS-21399 B73-10151 04

ANGLE OF ATTACK

Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09

Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

ANGLES (GEOMETRY)

Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
Eye point-of-regard system
ARC-10360 B71-10476 05
Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 B72-10209 03
An improved apochromatic wedge utilizing optical molecular contact bonding
GSFC-11082 B72-10388 03

ANGULAR ACCELERATION

Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06
New motor shaft angular accelerometer concept
LANGLEY-11030 B73-10119 02

ANGULAR DISTRIBUTION

Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03

ANGULAR RESOLUTION

Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
Angular device for optical filters
LANGLEY-11796 B75-10158 03

ANGULAR VELOCITY

Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06
Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03

ANHYDRIDES

New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
New primers for adhesive bonding of aluminum alloys
M-FS-21387 B71-10488 04
New polymer systems: Chain extension by dianhydrides
NPO-13046 B74-10077 04

ANILINE

Improved process for synthesizing anilinosilane compounds
M-FS-14948 B70-10105 04
Intumescent coatings as fire retardants
ARC-10099 B70-10450 04
A stable liquid crystal for electro-optical displays
HQ-10714 B72-10746 04

ANIMALS

Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05

Programmed physiological infusion system
ARC-10447 B72-10126 05
Real-time pair-feeding of animals
ARC-10302 B72-10298 05
An efficient, simple dialyzer
HQ-10741 B72-10522 05
A thermocouple thermode for small animals
ARC-10550 B72-10559 05
Environmental control and waste management system design concept
LANGLEY-11588 B74-10235 06

ANIONS

Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03
Microflora in soils of desert regions
NPO-11215 B70-10253 05
Covalent bonding of polycations to small polymeric particles
NPO-13487 B75-10327 04

ANISOTROPIC MEDIA

Improved ion exchange membrane
NPO-13309 B75-10117 04
Ellipsometer measurements of epitaxial GaAs layers: A concept
M-FS-23238 B75-10230 01

ANISOTROPIC PLATES

Computer program to compute buckling loads of simply supported anisotropic plates
LEWIS-11961 B73-10247 09

ANISOTROPY

Producing graphite with desired properties
NUC-11001 B71-10042 04
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09
Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08
Structural behavior of tapered inflated fabric cylinders under various loading conditions
MSC-15317 B71-10327 06

ANNEALING

Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04
Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
M-FS-18790 B70-10213 04
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
Improved welding of Rene-41
M-FS-18821 B70-10367 08
Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
Silicon solar cells improved by lithium doping
NPO-11390 B70-10585 04
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04

SUBJECT INDEX

Proposed semiconductor film improvement
 HQ-10685 B72-10438 04

Fabrication of porous plugs for control of liquid helium
 M-FS-23218 B75-10163 04

ANNULAR FLOW
 Gas turbine combustor insensitive to compressor outlet distortion
 LEWIS-10286 B70-10312 07

ANNULAR NOZZLES
 Sinusoidal-pressure generator for testing dynamic pressure probes
 LEWIS-11094 B70-10352 06

ANNULAR PLATES
 Split stator vane row for fans and compressors
 ARC-10288 B71-10528 06

Annular objective apertures improve resolution of electron microscopes
 ARC-10448 B72-10171 03

ANNULI
 Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03

Steady temperature and density distributions in a gas containing heat sources
 LEWIS-10905 B71-10398 09

ANODES
 High energy density electrochemical cell
 LEWIS-10969 B70-10151 01

Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
 HQ-10379 B70-10246 02

Electrodeposited inorganic separators for alkaline batteries
 GSFC-10943 B70-10462 01

Apparatus for simultaneous ion counting and current recording in mass spectrometry
 LEWIS-11103 B70-10471 03

The mechanism of stress-corrosion cracking in 7075 aluminum alloy
 M-FS-18614 B70-10527 04

Solid state remote circuit selector switch
 LEWIS-10387 B70-10579 01

Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03

Circuit modification aids in atomic particle discrimination
 LEWIS-11155 B70-10689 01

Miniature fuel cells relieve gas pressure in sealed batteries
 XGS-11370 B71-10064 02

Submersed sensing electrode used in fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01

Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08

Electrolysis cell functions as water vapor dehumidifier and oxygen generator
 ARC-10316 B71-10231 01

Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03

Rapid method for sampling metals for materials identification
 MSC-17332 B71-10320 04

Improved plasma accelerator
 ARC-10109 B71-10454 03

Laser device provides accurate reference to true gravitational vertical
 ARC-10444 B71-10479 07

Wide-range logarithmic radiometer for measuring high temperatures
 ARC-10254 B71-10498 01

A liquid radiation detector with high spatial resolution
 MSC-13965 B72-10034 03

Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02

High-temperature, long-life thyatron
 LEWIS-11327 B72-10134 01

Cell for electrolysis of water vapor
 ARC-10521 B72-10166 03

Silver-chlorine fuel cell: A concept
 ARC-10491 B72-10221 03

Improved high-performance shock tube
 NPO-11885 B72-10242 03

Ion plating seals microcracks or porous metal components
 LEWIS-11657 B72-10397 04

Al/C12 molten salt battery
 HQ-10696 B72-10527 01

ANODIC COATINGS
 Fabrication of electroacoustic RF amplifiers
 ERC-10266 B70-10460 01

ANODIZING
 Salvaging surface-damaged aluminum castings
 M-FS-18789 B70-10120 08

Cadmium plated steel caps seal anodized aluminum fittings
 M-FS-20137 B71-10355 05

Applying high-emittance and solar-absorptance coating to aluminum
 LANGLEY-10151 B73-10238 04

ANTENNA ARRAYS
 Antenna-array, phase quadrature tracking system
 MSC-12205 B70-10095 02

Fabrication of electroacoustic RF amplifiers
 ERC-10266 B70-10460 01

Swept-frequency UHF radiometer for deep probes of earth - A concept
 MSC-13428 B70-10617 02

Wide-angle, circularly polarized, omnidirectional-array antenna
 GSFC-10928 B71-10033 01

Economical phased-array antenna for environmental applications
 HQ-10434 B71-10057 02

Redirecting electromagnetic beams through wide angles
 ARC-10602 B72-10307 03

Microstrip antennas
 LANGLEY-11284 B73-10179 01

Scanning beacon locator system: A concept
 JSC-12593 B73-10318 02

Improved 135.6-MHz antenna
 ARC-10743 B73-10500 02

ANTENNA COMPONENTS
 Combined diplexer and harmonic filter
 LEWIS-12059 B73-10410 02

ANTENNA COUPLERS
 Phased-array antenna phase control circuit using frequency multiplication
 ERC-10285 B74-10251 01

ANTENNA DESIGN
 High-gain antenna with singly-curved reflector
 NPO-11361 B73-10291 02

ANTENNA RADIATION PATTERNS

Multiple-reflection conical microwave antenna
 NPO-11661 B73-10299 02

Flared-cone turnstile antenna
 LANGLEY-10970 B73-10425 02

Improved 135.6-MHz antenna
 ARC-10743 B73-10500 02

Variable-beamwidth antennas
 GSFC-11760 B74-10041 02

High-directivity acoustic antenna
 ARC-10789 B74-10050 02

Improved circularly polarized antenna
 ERC-10214 B74-10250 02

Amplitude-steered, pseudophased antenna array
 GSFC-11446 B74-10255 01

Bidirectional zoom antenna
 GSFC-11862 B74-10257 01

Horn antenna with v-shaped corrugated surface
 LANGLEY-11112 B74-10260 01

Low-loss, circularly-polarized dichroic plate
 NPO-13171 B74-10283 01

Highly-efficient horn/reflector antenna
 NPO-13568 B75-10330 01

ANTENNA FEEDS
 Radial rotating antenna-feed system
 GSFC-11013 B71-10025 01

Dual-frequency feed-horn antenna
 GSFC-10820 B71-10056 02

Enhancing efficiency of single, large-aperture antennas
 HQ-10597 B71-10287 01

Composite antenna feed system operates from VHF to X-band
 GSFC-11046 B71-10410 02

High-efficiency multifrequency feed
 GSFC-11909 B74-10288 02

Multibeam-antenna feed system to isolate orthogonally polarized beams
 NPO-13140 B75-10046 02

High-efficiency K-band tracking antenna feed
 MSC-14717 B75-10107 02

Variable-beamwidth antenna without moving parts
 GSFC-11924 B75-10215 02

ANTENNA RADIATION PATTERNS
 Antenna-array, phase quadrature tracking system
 MSC-12205 B70-10095 02

Improved manual radio frequency direction finder
 M-FS-20507 B70-10422 02

Improved modified turnstile antenna
 MSC-12209 B70-10482 01

Electronic scanning of 2-channel monopulse patterns
 GSFC-10299 B70-10485 02

Swept-frequency UHF radiometer for deep probes of earth - A concept
 MSC-13428 B70-10617 02

Automatic reference level control for an antenna pattern recording system
 M-FS-20257 B71-10014 01

Composite antenna feed system operates from VHF to X-band
 GSFC-11046 B71-10410 02

RF antenna-pattern visual aids for field use
 KSC-10821 B73-10426 02

Means for mapping radiated fields and for measuring differential movement of antenna elements
 NPO-13053 B73-10452 02

- Spacecraft attitude determination by fanscan technique
ARC-10827 874-10198 02
Variable-beamwidth antenna without moving parts
GSFC-11924 875-10215 02
- ANTENNAS**
High pressure flow-rate switch
NPO-10722 870-10028 07
General technique for measurement of refractive index variations
HQ-10359 870-10064 01
Multi-frequency resonant antenna
HQ-10215 870-10098 02
Detection and location of metal fragments in the human body
M-FS-14797 870-10107 05
Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 870-10230 09
A proposed laser measurement system for determining surface contour
HQ-10326 870-10263 02
Radiometric evaluation of antenna-feed component losses
NPO-11238 870-10344 02
Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 870-10457 02
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 870-10519 02
Tracking antenna deformation program
GSFC-11191 871-10017 09
Low-cost quasi-parabolic antenna
LEWIS-11291 871-10121 01
RF-controlled implantable solid state switch
ARC-10136 871-10426 01
Radiation diffraction calculation program /DIFF2/
GSFC-11422 871-10462 09
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 872-10035 05
Deep space network
NPO-11562 872-10043 01
Remote measurement of the water content of snowpacks
ARC-10651 872-10567 03
Improved 135.6-MHz antenna
ARC-10743 873-10500 02
Wireless telemetry system for floating bodies
KSC-10855 874-10028 06
- ANTHRACENE**
Scintillation detector for carbon-14
ARC-10378 871-10144 03
- ANTIBIOTICS**
Rapid method for determination of antimicrobial susceptibilities pattern of urinary bacteria
GSFC-12039 875-10253 05
- ANTIBODIES**
Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 872-10006 05
- ANTIFREEZES**
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 871-10331 04
- ANTIFRICTION BEARINGS**
Space suit may have orthotic applications
ARC-10275 872-10297 05
Ball bearing protector
M-FS-21612 872-10322 07
- Simple turbine balancing test apparatus
LEWIS-11658 872-10377 07
Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 872-10627 04
New detection method for rolling element and bearing defects
M-FS-21911 872-10689 06
Magnetic bearings with combined radial and axial control
GSFC-11551 874-10131 06
- ANTIINFECTIVES AND ANTIBACTERIALS**
Chemical pretreatment for the distillation of urine
JSC-14225 873-10224 04
- ANTIMONY**
P-n junctions formed in gallium antimonide
ERC-10302 870-10500 01
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 871-10172 04
- ANTINODES**
Levitation of objects using acoustic energy
M-FS-23261 875-10232 03
- ANTIOXIDANTS**
The deterioration of intermediate moisture foods
MSC-13827 871-10332 05
- ANTISEPTICS**
Improved method of using paraformaldehyde as a disinfectant
MSC-15887 871-10096 05
Self-sterilizing polymers
M-FS-22054 873-10090 04
Chemical pretreatment for the distillation of urine
JSC-14225 873-10224 04
Iodine generator for disinfecting reclaimed water
MSC-14632 874-10153 05
- ANTISKID DEVICES**
Antiskid braking system
M-FS-22807 874-10146 06
Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
LANGLEY-11897 875-10264 06
- ANVILS**
An electrothermally actuated micro valve
NPO-10730 870-10171 07
Synthesis of diamonds
M-FS-20698 870-10513 08
Cable insulation cut-through tester
M-FS-20114 871-10459 08
Apparatus for measuring electrical properties of materials
NPO-11749 873-10025 03
- APERIODIC FUNCTIONS**
Hyperbola-generator for location of aperiodic events
LANGLEY-10312 870-10695 06
- APERTURES**
Noncontacting-optical-strain device
NPO-10778 870-10292 03
Digital telemetry system eliminates data redundancy
MSC-12388 871-10082 02
Radiant energy absorption enhancement in optical imaging systems
ARC-10194 871-10112 03
- Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 871-10131 03
Beam squint correction for a duplex, retrodirective phased array
GSFC-11023 871-10444 02
Modified camera records lens settings on film
MSC-12363 871-10494 03
Shutter design for stereoscopic camera
MSC-13613 871-10506 03
Mass separator for low velocity ions
ARC-10375 872-10123 03
Annular objective apertures improve resolution of electron microscopes
ARC-10448 872-10171 03
Vortex servovalve for fluidic or electrical input
ARC-10155 872-10173 07
- APEXES**
An improvement in blackbody cavity design
LANGLEY-10292 870-10711 03
Modular construction provides large volume storage facility in minimum space
M-FS-13568 871-10354 08
- APPLICATIONS OF MATHEMATICS**
Measuring the conductor spacing in flat conductor cables
M-FS-20560 870-10015 08
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 870-10059 01
Theory and application of Kalman filtering
M-FS-20491 870-10309 06
Chebyshev minimax control theory
M-FS-20639 870-10315 03
Variables in turbine erosion
M-FS-18677 870-10325 03
Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 870-10362 07
Mathematical techniques for estimating operational readiness of complex systems
MSC-17694 872-10335 09
Variable boundary II heat conduction
LEWIS-10679 872-10444 09
Computer program analyzes and monitors electrical power systems (POSIMO)
GSFC-11505 872-10610 09
Method for nonlinear exponential regression analysis
M-FS-21965 872-10622 09
Computer program to generate attitude error equations for a gimbaled platform
M-FS-21991 872-10624 09
A nonlinear-coherence receiver
NPO-11921 873-10144 02
Minimization search method for data inversion
NPO-99999 875-10338 09
- APPROACH CONTROL**
Aircraft communication via telefacsimile system
M-FS-20839 872-10139 02
- APPROXIMATION**
Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 870-10581 03
Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 871-10273 03

SUBJECT INDEX

A continued fraction generator for smooth pulse sequences
 MSC-13697 B71-10304 01
 Statistical analysis tables for truncated or censored samples
 M-FS-21024 B71-10351 03
 Error evaluation for difference approximations to ordinary differential equations
 M-FS-21610 B71-10423 09
 Hybrid computer techniques for solving partial differential equations
 M-FS-21386 B71-10424 09
 Minimum weight meteoroid shielding determination
 MSC-17017 B71-10447 09
 Cubic spline functions for curve fitting
 LRL-10034 B72-10311 09

AQUEOUS SOLUTIONS

Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
 HQ-10379 B70-10246 02
 Rapid analytical determination of glutaraldehyde concentrations
 ARG-10413 B71-10047 05
 Bacterial adenosine triphosphate as a measure of urinary tract infection
 GSFC-11092 B71-10051 05
 Photosensitive plastic used to produce three-dimensional casting patterns
 LANGLEY-10742 B71-10127 08
 Electrolysis cell functions as water vapor dehumidifier and oxygen generator
 ARC-10316 B71-10231 01
 New primers for adhesive bonding of aluminum alloys
 M-FS-21387 B71-10488 04
 Stabilization of lactate dehydrogenase
 ARC-10415 B72-10062 05
 Particle detection by a light-scattering technique
 ARC-10384 B72-10160 03
 Carbon dioxide concentrator
 ARC-10245 B72-10194 05
 Electron beam chemistry produces high purity metals
 LEWIS-11639 B72-10439 04
 Nonflammable and abrasion resistant coating process for glass fibers
 MSC-14024 B72-10445 08

ARC DISCHARGES

Bistable fluidic valve is electrically switched
 NPO-10416 B70-10517 07
 Self-protected electrodes limit field-emission current
 ERC-10015 B74-10253 01

ARC GENERATORS

Computer modeling of arc drivers
 ARC-10955 B75-10130 09

ARC HEATING

Inexpensive high-temperature furnace for thermocouple calibration
 NUC-10372 B71-10046 03
 Pulsed high-power arc heater with improved cathode and triggering mechanism
 ARC-10173 B72-10048 03

ARC LAMPS

Optical contamination during thermal testing in vacuum
 M-FS-20736 B70-10659 03
 A 7.6m /25-ft/ extreme environments simulator
 NPO-11353 B71-10036 03

Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03
 Oscillating tank circuit eliminates ballast resistor in lamp control circuit
 M-FS-20891 B71-10275 01
 A dual-beam actinic light source for photosynthesis research
 ARC-10351 B72-10205 05
 Casting copper to tungsten for high-power arc lamp cathodes
 LEWIS-12169 B74-10011 04
 Uniform high irradiance source
 LEWIS-12360 B75-10008 03
 Ultraviolet hydrogen-discharge lamp
 MSC-14793 B75-10272 03

ARC MELTING

Directionally solidified superalloy
 HQ-10522 B70-10058 04
 Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
 HQ-10450 B70-10206 04

ARC SPRAYING

High-friction mechanical grips
 JSC-19260 B73-10234 06

ARC WELDING

Solid-state ac-to-dc converter
 HQ-10545 B70-10147 02
 Analysis of thermal stress and metal movement during welding
 M-FS-20984 B72-10333 04
 Grain refinement control in gas-shielded arc welding of aluminum tubing
 JSC-19095 B73-10508 08

ARCHES

Flexible electrical conductors for high-temperature switchgear
 LEWIS-11109 B70-10569 01

ARCHITECTURE

Techniques for improving reliability of computers
 M-FS-21326 B72-10109 02
 Fabrication of carbon film composites for high-strength structures
 ARC-10613 B72-10423 04
 Solar residential heating and cooling system
 M-FS-23260 B75-10165 06
 Solar power roof shingle
 LEWIS-12587 B75-10289 01
 Low-cost hot-air solar collector
 M-FS-23272 B75-10301 08

AREA

Computerized toroidal transformer design
 NPO-11115 B70-10606 09

ARGON

Commutating brushes tested in dc motors in dry argon atmospheres
 ARG-10243 B70-10045 01
 A stabilized low-frequency alternating-current electric arc
 LEWIS-10442 B70-10065 01
 Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
 M-FS-18712 B70-10092 04
 Ultrasonic propagation in gases at high temperatures
 HQ-10498 B70-10137 03
 The columbium-hydrogen system and hydrogen embrittlement of columbium
 M-FS-18659 B70-10146 04
 High temperature rare earth solid lubricants
 LEWIS-10983 B70-10175 04

ARGON LASERS

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
 HQ-10450 B70-10206 04
 Low pressure arc electrode
 ARC-10012 B70-10329 01
 Uniform data system standardizes technical computations and the purchasing of commercially important gases
 NUC-10549 B70-10333 04
 Improved welding of Rene-41
 M-FS-18821 B70-10367 08
 Improved photoionization mass spectrometer
 LANGLEY-10180 B70-10402 04
 Extended-life magnetic recording heads
 GSFC-10097 B70-10521 01
 Oxidation-resistant coatings for refractory metals used in inert atmospheres
 NPO-11477 B70-10674 04
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08
 Oxidation-resistant silicide coating applied to columbium alloy screen
 ARC-10186 B71-10229 04
 Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03
 Improved brazing technique for pyrolytic graphite
 NPO-12026 B71-10293 08
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04
 Superconductor transition temperatures study
 M-FS-21247 B71-10385 03
 A liquid radiation detector with high spatial resolution
 MSC-13965 B72-10034 03
 Long-term drift of thermocouples at 1600 K
 LEWIS-11471 B72-10176 01
 Diatomic infrared gasdynamic laser permits selection of wavelengths
 ARC-10370 B72-10206 03
 A sensitive image intensifier which uses inert gas
 LRL-10024 B72-10312 03
 Plasma calcining of pigment particles for thermal control coatings
 M-FS-21267 B72-10320 04
 Ion plating seals microcracks or porous metal components
 LEWIS-11657 B72-10397 04
 Proposed semiconductor film improvement
 HQ-10685 B72-10438 04
 Metastable atom probe for measuring electron beam density profiles
 M-FS-21593 B72-10485 03
 Sputter etching of hemispherical bearings
 HQ-10712 B72-10534 08
 Casting copper to tungsten for high-power arc lamp cathodes
 LEWIS-12169 B74-10011 04

ARGON LASERS

Laser addressed holographic memory system
 M-FS-22565 B73-10155 03
 Laser-actuated holographic storage device
 M-FS-22768 B73-10423 03

ARITHMETIC AND LOGIC UNITS

SUBJECT INDEX

ARITHMETIC AND LOGIC UNITS

Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01

ARM (ANATOMY)

Master/slave manipulator system
ARC-10756 B73-10496 06

ARMATURES

Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
Brushless direct-current motor with stationary armature and field
XGS-05290 B70-10691 02
Improved relay chatter detector
NPO-10355 B71-10292 01
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
A brushless dc spin motor for momentum exchange altitude control
M-FS-14952 B72-10448 02

ARMOR

Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04

ARMS (ANATOMY)

Improved orthopedic arm joint
M-FS-21611 B71-10485 05

AROMATIC COMPOUNDS

Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04

ARRAYS

Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
Array multiplier
ERC-90076 B70-10047 02
Improved solid state electron-charge-storage device
HQ-10152 B70-10074 01
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01
Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04
Sheet plastic filters for solar cells
NPO-11464 B72-10090 04
Interconnections for fluidic circuits
ARC-10481 B72-10164 02
Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02
Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03

ARRESTING GEAR

Dry-frictional shock absorber
NPO-11212 B70-10040 07

ARSENIC

Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04

ARSENIC COMPOUNDS

Vapor phase growth of group 3, 4, and 5 compounds by HCl transport of elements
LANGLEY-11144 B73-10056 04

ARTERIES

Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05

ARTERIOSCLEROSIS

An economical arterial-pulse-wave transducer
GSFC-11531 B73-10046 05

ARTIFACTS

Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 B70-10177 04

ARTILLERY

Dry-frictional shock absorber
NPO-11212 B70-10040 07

ASBESTOS

Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03
Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
New type of nonflammable paper
MSC-13432 B70-10546 04
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
Carbon dioxide concentrator
ARC-10245 B72-10194 05
Hydrogen eliminator
ARC-10408 B72-10208 03
Reconstituted asbestos matrix for fuel cells
MSC-12568 B75-10339 04

ASSAYING

Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Automated method for study of drug metabolism
ARC-10469 B73-10030 04

ASSEMBLER ROUTINES

Tracking antenna deformation program
GSFC-11191 B71-10017 09
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
Significance arithmetic experimental package (SIGPAC)
GSFC-11499 B72-10600 09
Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 B72-10606 09
Two autowire versions for CDC-3200 and IBM-360
GSFC-11526 B72-10608 09

Improved general-purpose namelist processor
LANGLEY-11834 B75-10263 09

ASSEMBLIES

Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08
Induction brazing manual
M-FS-14924 B71-10123 08
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Simple two-speed tape transport drive
GSFC-10981 B71-10409 06
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06
Pressure-probe assembly for wind tunnels
ARC-10569 B72-10248 03

ASSEMBLING

Applications of gap welding
M-FS-20715 B70-10155 08
Easy insert, easy release toggle bolt fastener
ARC-10140 B70-10509 07
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Exothermic brazing units
M-FS-21435 B71-10467 08
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
Expandable space frames
ERC-10365 B74-10252 06
Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06
Process for preparing polyimide adhesives
LANGLEY-11397 B75-10257 08

ASSEMBLY LANGUAGE

FORTAN 4 digital program changer
MSC-17567 B71-10448 09
Graphics shadowing analysis
M-FS-21406 B74-10040 09
Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
Extensive set of macros for structured programming in OS/360 assembly language (STRCMACS)
GSFC-11938 B75-10033 09
Remote file inquiry (RFI) system
KSC-10837 B75-10155 09

ASTIGMATISM

Fine guidance for a spaceborne telescope
GSFC-11487 B73-10468 03

ASTRONAUT PERFORMANCE

Space-suit carbon dioxide absorption system: A concept
ARC-10546 872-10168 05

ASTRONAUTS

Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 870-10680 03

High mobility work station restraint support
MSC-12419 871-10301 07

Estimating carbon monoxide exposure
MSC-17211 871-10319 04

ASTRONOMICAL SPECTROSCOPY

Stellar spectrum classifier
MSC-13450 870-10319 03

ASTRONOMY

General technique for measurement of refractive index variations
HQ-10359 870-10064 01

Stellar spectrum classifier
MSC-13450 870-10319 03

Improved optical lens system
NPO-11311 870-10354 03

Quick response targeting program
M-FS-15157 871-10147 09

Sunspot analysis and prediction
M-FS-21724 872-10317 03

Improved noise-adding radiometer for microwave receivers
NPO-11706 873-10345 02

Digital multichannel photometer
HQ-10791 874-10200 03

ASTROPHYSICS

Ultrasonic propagation in gases at high temperatures
HQ-10498 870-10137 03

System automatically tunes hydrogen masers
HQ-10502 870-10616 02

Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 874-10168 03

ASYMMETRY

Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 870-10406 06

ASYMPTOTIC METHODS

Peak structural response to nonstationary random excitations
NPO-11617 871-10188 06

ASYMPTOTIC SERIES

Use of multivariable asymptotic expansions in a satellite theory
NPO-11750 873-10303 09

ATMOSPHERIC ATTENUATION

Miniature carbon dioxide sensor
MSC-13332 871-10536 03

ATMOSPHERIC CHEMISTRY

Airborne spectrometer senses several gases
MSC-13234 870-10438 03

Atmospheric density variations related to internal gravity waves
M-FS-21637 872-10143 03

ATMOSPHERIC CIRCULATION

Cell for electrolysis of water vapor
ARC-10521 872-10166 03

Aircrew oxygen system
ARC-10247 872-10195 05

ATMOSPHERIC COMPOSITION

Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 870-10094 04

Mercury in the environment
AEC-10048 872-10233 05

Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 872-10665 03

Extendible probe for atmosphere sampling
ARC-10829 874-10054 03

ATMOSPHERIC DENSITY

Cloud-free resolution element statistics program
GSFC-11494 871-10463 09

Atmospheric density variations related to internal gravity waves
M-FS-21637 872-10143 03

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 875-10093 09

ATMOSPHERIC DIFFUSION

Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 871-10111 03

ATMOSPHERIC ELECTRICITY

Lightning flash detection system
ARC-10562 872-10272 02

Measuring the electric field of a cloud
KSC-10731 873-10074 02

Rocket borne instrument to measure electric fields inside electrified clouds
KSC-10730 873-10176 03

Time-of-arrival lightning activity location system
KSC-11006 875-10297 02

ATMOSPHERIC ENTRY

Telemetry receiver
NPO-10746 870-10008 02

Analysis of surface ablation of noncharring materials
ARC-10223 870-10615 09

Closed-loop control of stochastic nonlinear systems
MSC-13858 871-10306 09

Optimized braking of landing vehicles with atmospheric drag
NPO-11402 872-10084 06

Improved high-performance shock tube
NPO-11885 872-10242 03

Volume-reflecting dielectric heat shield
ARC-10803 874-10074 04

ATMOSPHERIC HEATING

Atmospheric density variations related to internal gravity waves
M-FS-21637 872-10143 03

ATMOSPHERIC MODELS

Handbook for estimating toxic fuel hazards
M-FS-21114 875-10198 04

ATMOSPHERIC MOISTURE

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 875-10093 09

ATMOSPHERIC PRESSURE

Metabolic breath analyzer
M-FS-21415 871-10466 05

Psychrometric chart for physiological research
ARC-10394 871-10470 03

Hydrogen eliminator
ARC-10408 872-10208 03

ATMOSPHERIC RADIATION

Interferometer for measurement of optical polarization
NPO-11239 870-10405 03

ATMOSPHERIC TEMPERATURE

Atmospheric temperature measurements by Raman laser scattering
LEWIS-12065 873-10251 03

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 875-10093 09

ATMOSPHERIC TURBULENCE

Chebyshev minimax control theory
M-FS-20639 870-10315 03

Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 871-10224 02

Atmospheric density variations related to internal gravity waves
M-FS-21637 872-10143 03

Program to determine space vehicle response to wind turbulence
M-FS-21614 872-10410 09

Laser system detects air turbulence
M-FS-21244 873-10210 03

Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 874-10168 03

ATMOSPHERICS

An automatic lightning detection and photographic system
KSC-10728 873-10043 02

Measuring the electric field of a cloud
KSC-10731 873-10074 02

Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 874-10259 01

ATOM CONCENTRATION

Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 874-10184 03

ATOMIC CLOCKS

Quasars as very-accurate clock synchronizers
NPO-13276 875-10114 02

ATOMIC COLLISIONS

Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 870-10441 03

ATOMIC EXCITATIONS

Simplified procedure for emission spectrochemical analysis
LEWIS-10985 871-10359 04

ATOMIC MOBILITIES

Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 874-10063 03

ATOMIC PHYSICS

Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 870-10581 03

Circuit modification aids in atomic particle discrimination
LEWIS-11155 870-10689 01

ATOMIC WEIGHTS

An empirical relationship for the penetration of 1 to 3 MeV electrons
LEWIS-11495 872-10144 04

ATOMIZERS

Air-atomizing splash-cone fuel nozzle reduces pollutant emissions from turbojet engines
LEWIS-11918 873-10200 06

ATOMIZING

Experimental verification of computer spray-combustion models
ARC-10689 873-10031 03

ATTACHMENT

Support for equipment - Quick mounting with quick release
MSC-15874 870-10542 07

Wall attachment, fluoric crossover "AND" gate
XLA-07391 871-10178 07

ATTENUATION

Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
 M-FS-21924 B72-10316 01
 Quick-donning backpack harness
 LANGLEY-10102 B72-10641 05

ATTENUATION

Contourograph display system for monitoring electrocardiograms
 MSC-13407 B70-10030 05
 Active resistance capacitance filter design
 ARC-10020 B70-10034 01
 Radio frequency baseband recording technique
 HQ-10317 B70-10069 02
 A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01
 A self-tuning filter
 ARC-10264 B70-10337 01
 Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03
 RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
 GSFC-10983 B70-10664 02
 Fast peak selector for mass spectrometer
 LANGLEY-10268 B71-10009 04
 Multichannel intercom with simultaneous send/receive capability
 M-FS-18808 B71-10228 02

ATTENUATORS

High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01
 Ultrastable reference pulser for high-resolution spectrometers
 ARG-10364 B70-10216 01
 Ferrite attenuator modulation improves antenna performance
 NPO-12011 B70-10702 01
 Universal interface enables one recorder to serve numerous measuring instruments
 M-FS-15134 B71-10011 01
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 B71-10079 04
 Flight tests of vortex-attenuating splines
 LANGLEY-11645 B74-10187 03

ATTITUDE (INCLINATION)

Expanded sun-look angle program
 MSC-13176 B70-10602 09
 Hydraulically operated tilt table
 M-FS-21047 B71-10024 05
 Tilt table for ergometers and other biomedical devices
 M-FS-21010 B71-10241 05
 Spacecraft attitude determination by fanscan technique
 ARC-10827 B74-10198 02

ATTITUDE CONTROL

New microwave spectrometer/imager has possible applications for pollution monitoring
 NPO-10535 B70-10187 03
 Two-axis flux gate magnetometer
 GSFC-10441 B70-10345 01
 A 7.6 m /25-ft/ extreme environments simulator
 NPO-11353 B71-10036 03
 Attitude controls for VTOL aircraft
 XAC-8972 B71-10202 05
 Coarse roll-rate gain-control circuit
 ARC-10064 B71-10204 01

Pulse width-pulse rate modulator
 ARC-10025 B71-10497 01
 Pressure sensitive gas flow meter
 ARC-10219 B72-10049 06
 Adaptive position control loop
 ARC-10255 B72-10052 02
 Inertial reference unit
 NPO-11518 B72-10094 02
 Driver circuit for inductive loads
 ARC-10073 B72-10268 01
 Solar aspect determination system
 GSFC-11444 B73-10129 02
 Hybrid coordinate formulation used for the design of attitude control systems for flexible spacecraft
 NPO-11714 B73-10300 09
 Combined sun-acquisition and sun gate-sensor system for spacecraft attitude control
 NPO-13051 B73-10460 02
 Solid-state controller
 JSC-12394 B73-10466 06
 Magnetic bearings with combined radial and axial control
 GSFC-11551 B74-10131 06
 Magnetic-heading reference device
 LANGLEY-11387 B74-10176 02
 Pulse-width-modulated servo valve for autopilot system
 LANGLEY-11643 B74-10179 06
 Gas bearing operates in vacuum
 NPO-13425 B75-10052 06
 Improved aircraft reaction nozzles
 ARC-10906 B75-10284 06

ATTITUDE STABILITY

Wide angle solar sensor
 NPO-11341 B72-10080 01

AUDIO EQUIPMENT

Audio signal processor
 MSC-12223 B70-10180 01
 Communications system for zero-g simulation tests in water
 M-FS-21357 B71-10344 02
 An absentee monitoring device
 KSC-10668 B72-10578 01
 Radio-controlled, sound-operated switch
 LANGLEY-11641 B74-10143 03
 Portable headset microphone checker
 KSC-10699 B75-10254 02

AUDIO FREQUENCIES

Precise audio-frequency markers for nuclear magnetic resonance spectra
 NPO-11147 B70-10086 02
 Simplified method for measuring the impedance of RF power sources - A concept
 NPO-10734 B70-10212 02
 Multifunction audio digitizer for communications systems
 MSC-13855 B71-10318 02
 Nondestructive testing of bond integrity in foam insulation/aluminum composites
 M-FS-20786 B71-10507 06
 Improved audio reproduction system
 ARC-10404 B72-10059 01

AUDITORY SIGNALS

Lamp modulator provides signal magnitude indication
 KSC-10565 B70-10700 01
 Aircraft-crash-locating transmitter features design improvements
 M-FS-16609 B71-10213 02
 A sonic transducer to detect fluid leaks
 KSC-10704 B72-10376 01
 An absentee monitoring device
 KSC-10668 B72-10578 01

Radio-controlled, sound-operated switch
 LANGLEY-11641 B74-10143 03

AUDITORY STIMULI

An absentee monitoring device
 KSC-10668 B72-10578 01
 Loudness (annoyance), prediction procedure for steady sounds
 LEWIS-11761 B72-10579 05

AURORAS

Atmospheric density variations related to internal gravity waves
 M-FS-21637 B72-10143 03
 Sunspot analysis and prediction
 M-FS-21724 B72-10317 03

AUSTENITIC STAINLESS STEELS

Materials data handbooks on stainless steels
 M-FS-22797 B73-10397 04

AUTOCLAVES

High temperature autoclave vacuum seals
 M-FS-21131 B71-10433 08
 High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
 LEWIS-11229 B71-10489 04
 Low-void polyimide resins for autoclave processing
 LEWIS-11665 B72-10728 04

AUTOCLAVING

Heart catheter cable and connector
 ARC-10406 B72-10200 05
 Titanium reinforced boron polyimide composite
 M-FS-21916 B72-10353 04
 Autoclave heat treatment for prealloyed powder products
 LEWIS-11953 B73-10172 04
 Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
 LEWIS-11490 B74-10124 04

AUTOCODERS

TCB operation supply inventory system /TCBSYS/
 GSFC-11306 B71-10314 09

AUTOCORRELATION

High-resolution spectral analysis
 NPO-10748 B70-10039 01
 General technique for measurement of refractive index variations
 HQ-10359 B70-10064 01
 Optical probing of supersonic aerodynamic turbulence
 M-FS-20686 B70-10665 03

AUTOMATIC CONTROL

Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
 NPO-11069 B70-10067 09
 Solid-state ac-to-dc converter
 HQ-10545 B70-10147 02
 Audio signal processor
 MSC-12223 B70-10180 01
 PERT "C"
 M-FS-20164 B70-10184 09
 High-powered automatic latching device
 MSC-15474 B70-10198 07
 Self-contained miniature electronics transceiver provides voice communication in hazardous environment
 KSC-10164 B70-10335 01
 Jettisoning system for a parachute's canister
 NPO-11236 B70-10398 06

SUBJECT INDEX

SUBJECT INDEX

Optimal electric-drive system for vehicles
 NPO-11210 B70-10435 02
 Self testing and repairing computer - A concept
 NPO-10567 B70-10452 09
 Inexpensive automatic ranging for digital voltmeters and frequency counters
 NUC-10240 B70-10530 01
 High-temperature rapid-response thermocouple for reducing atmospheres
 NUC-10530 B70-10564 03
 System automatically tunes hydrogen masers
 HQ-10502 B70-10616 02
 Fast peak selector for mass spectrometer
 LANGLEY-10268 B71-10009 04
 Miniature grinder for solid specimens
 M-FS-20005 B71-10059 05
 Thin spray film thickness measuring technique
 M-FS-20842 B71-10062 08
 Metal alloy resistivity measurements at very low temperatures
 NUC-10557 B71-10104 04
 Automatic amino acid analyzer
 ARC-10215 B71-10165 04
 Attitude controls for VTOL aircraft
 XAC-8972 B71-10202 05
 Variable-area nozzle automatically controls fluid flow
 LEWIS-11217 B71-10222 07
 Study of nondestructive techniques for redundancy verification
 KSC-10661 B71-10258 02
 Automatic transmission line monitor
 KSC-10385 B71-10288 02
 A system for the automatic measurement and digital display of systolic and diastolic blood pressures
 MSC-13227 B71-10329 05
 Remote control radioactive-waste removal system uses modulated laser transmitter
 LANGLEY-10311 B71-10343 03
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06
 Real-time pair-feeding of animals
 ARC-10302 B72-10298 05
 A valve concept for remote fluid flow control
 M-FS-16097 B72-10400 07
 Automatic air flow control in air conditioning ducts
 GSFC-11445 B72-10490 06
 Automatic agar tray inoculation device
 LANGLEY-11074 B72-10637 05
 A proposed remote manipulator system: A concept
 MSC-14245 B72-10733 06
 Automatic speed control of highway traffic
 M-FS-21791 B73-10100 02
 Automatic quadrature control and measuring system
 M-FS-21660 B73-10127 02
 Automatic focus control for facsimile camera
 LANGLEY-11213 B73-10361 02
 Accelerometer-controlled automatic braking system
 LANGLEY-11383 B73-10419 06
 Throttleable heat pipe
 ARC-10848 B74-10173 03

Swashplate feedback control for tilt-rotor aircraft
 ARC-10854 B74-10174 06
 Automatic soldering machine
 MSC-19401 B74-10193 06
 Automated maintenance for complex hybrid systems
 NPO-13143 B74-10279 09
AUTOMATIC CONTROL VALVES
 Novel valve for reciprocating compressors - Concept
 MSC-15060 B70-10160 07
 Pulse width-pulse rate modulator
 ARC-10025 B71-10497 01
 Multichamber controllable heat pipe
 ARC-10199 B71-10526 03
 Automatic water inventory, collecting, and dispensing unit
 LANGLEY-11071 B72-10663 06
 Programmed-pressure air supply for positive-pressure breathing system
 ARC-10845 B74-10075 05
AUTOMATIC FREQUENCY CONTROL
 Frequency shifting with a solid-state switching capacitor
 HQ-10812 B73-10259 01
 Minicomputer-controlled frequency generator
 NPO-11962 B74-10163 02
AUTOMATIC GAIN CONTROL
 Constant-amplitude RC oscillator
 ARC-10262 B70-10338 01
 Automatic reference level control for an antenna pattern recording system
 M-FS-20257 B71-10014 01
 Low phase-shift amplifier
 NPO-11663 B72-10185 01
 Acoustical analysis system
 GSFC-11087 B72-10751 02
AUTOMATIC PILOTS
 Magnetic-heading reference device
 LANGLEY-11387 B74-10176 02
 Pulse-width-modulated servo valve for autopilot system
 LANGLEY-11643 B74-10179 06
AUTOMATIC TEST EQUIPMENT
 Automated validation of a computer operating system
 M-FS-14510 B70-10257 09
 An ampere-hour meter for batteries
 M-FS-22067 B73-10118 02
 Automated operation of an instrumentation FM tape recorder
 LEWIS-11941 B73-10195 02
AUTOMATION
 A system for automatic analysis of blood pressure data for digital computer entry
 LEWIS-11751 B72-10632 05
 Dual field alignment display and control for electron micropattern generator
 M-FS-22118 B72-10646 01
 Automatic microbial transfer
 LANGLEY-11354 B73-10229 05
AUTOMOBILE ENGINES
 Steam automobile analysis
 M-FS-23188 B75-10229 03
AUTOMOBILES
 Hydraulic brake safety valve
 M-FS-16444 B70-10207 07
 Reliability Analysis Model
 M-FS-14513 B70-10614 09
 A report of advancements in structural dynamic technology resulting from Saturn 5 programs
 LANGLEY-10684 B70-10710 06

AVALANCHE DIODES

A new method for measuring slipperiness of airport runways and other paved surfaces
 LANGLEY-10795 B70-10712 06
 Limited life item management
 M-FS-24020 B71-10196 06
 Estimating carbon monoxide exposure
 MSC-17211 B71-10319 04
 Hydraulic expansion process shapes large metal sheets
 MSC-12432 B71-10511 07
 Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
 LEWIS-11638 B72-10137 04
 A sonic transducer to detect fluid leaks
 KSC-10704 B72-10376 01
 Brake wear warning device: A concept
 JSC-19157 B73-10123 02
 System for measuring passenger reaction to transportation-vehicle vibration
 LANGLEY-11353 B73-10436 05
 Short-range laser obstacle detector
 NPO-11856 B74-10101 03
 Location of vehicles using AM station broadcasting signals
 NPO-13217 B74-10300 02
 Steam automobile analysis
 M-FS-23188 B75-10229 03
 Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
 LANGLEY-11897 B75-10264 06
AUXILIARY POWER SOURCES
 Load cell for thermionic converter tests
 LEWIS-11068 B70-10470 01
 Design and evaluation of brushless electrical generators
 LEWIS-10124 B70-10554 02
 Latch mechanism
 M-FS-21606 B72-10457 08
AUXILIARY PROPULSION
 Propulsion sizing program
 MSC-14016 B72-10605 09
 Satellite auxiliary propulsion systems
 NPO-11744 B73-10023 06
AVAILABILITY
 System availability management technique for reliability and maintainability analysis
 KSC-10315 B70-10063 09
AVALANCHE DIODES
 Solid state switch provides high input-to-output isolation
 HQ-10488 B70-10022 01
 Constant-voltage drive current-steering switch
 NPO-10743 B70-10046 01
 Improved low cost ac-to-dc converter
 NPO-11055 B70-10076 01
 Precision full-wave rectifier
 ARC-10101 B70-10161 02
 Constant current source for converting absolute temperatures to analog voltages
 NPO-10733 B70-10164 02
 Dual current readout for precision plating
 MSC-15673 B70-10392 01
 Transistor current and voltage limiting switch
 NPO-11166 B70-10414 01
 Solid state remote circuit selector switch
 LEWIS-10387 B70-10579 01
 Universal interface enables one recorder to serve numerous measuring instruments
 M-FS-15134 B71-10011 01

AXES (REFERENCE LINES)

- High voltage lightning grounding device
LEWIS-11282 B71-10136 01
Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 B71-10275 01
Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
Gas leak-detection system
NPO-11405 B72-10087 03
Precision voltage regulator
NPO-11502 B72-10092 01
A simple tachometer circuit
ARC-10603 B72-10308 01
Oven temperature controller for electronic components
GSFC-11466 B73-10052 02
Operational slope-limiting circuit
NPO-11773 B73-10346 01
Zener-regulated solar array/battery power system
M-FS-23195 B75-10162 02

AXES (REFERENCE LINES)

- An improvement in blackbody cavity design
LANGLEY-10292 B70-10711 03

AXES OF ROTATION

- Calculation of the inertia tensor and center of gravity of complex bodies
NPO-10827 B70-10158 09
Manually operated elastomer heat pump
NPO-10677 B70-10270 03
Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06
Laser method for finding axis of rotation
ARC-10388 B70-10439 03

AXIAL COMPRESSION LOADS

- New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
Fatigue testing device
LANGLEY-10426 B73-10047 07
Biaxial compression test technique
MSC-14883 B75-10319 08

AXIAL FLOW

- Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
Swirl-can combustor segment
LEWIS-11082 B70-10322 07
Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09

AXIAL FLOW PUMPS

- An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07
A method for calculating the effects of design errors and measurement errors on pump performance
LEWIS-11503 B72-10292 07
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

AXIAL FLOW TURBINES

- Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
Computer program for preliminary design analysis of axial-flow turbines
LEWIS-11815 B73-10066 09
Computer program for definition of transonic axial-flow compressor blade rows
LEWIS-12325 B75-10021 09
Turbine design review text
LEWIS-12560 B75-10287 06

AXIAL LOADS

- Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
Rotordynamic response analysis program
HQ-10579 B71-10211 09
Structural behavior of tapered inflated fabric cylinders under various loading conditions
MSC-15317 B71-10327 06
Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07
Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 B73-10258 08

AXIAL STRAIN

- Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06
Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01

AXIAL STRESS

- Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04

AXISYMMETRIC BODIES

- FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
Axisymmetric and cylindrical isostable structures - A concept
NPO-12049 B71-10446 06
Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09

SUBJECT INDEX

- Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09
Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09
Computer program for stress, vibration, and buckling characteristics of general shells of revolution
LANGLEY-11369 B73-10363 09
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

AXISYMMETRIC FLOW

- Method of calculating blade-to-blade plane flow in centrifugal pump
M-FS-18087 B70-10124 06
Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09
Computer program for the prediction of reorientation flow dynamics
LEWIS-11816 B73-10307 09
Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09

AZIMUTH

- Electronic scanning of 2-channel monopulse patterns
GSFC-10299 B70-10485 02
Expanded sun-look angle program
MSC-13176 B70-10602 09
Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 B71-10044 06
Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
Eye point-of-regard system
ARC-10360 B71-10476 05
LEAPS (Laser electro-optical alignment pole for surveying)
GSFC-11262 B73-10122 02

AZINES

- Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04

AZOLES

- Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04

B

BACKGROUND NOISE

- Radiometric evaluation of antenna-feed component losses
NPO-11238 B70-10344 02
An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03
Coaxial anode improves sensitivity of gas radiation counters
GSFC-11492 B74-10229 03

BACKSCATTERING

- Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01

SUBJECT INDEX

Remote determination of sea conditions
by electromagnetic backscatter
measurement
M-FS-13777 04

BACKUPS

Magnetic gear backup
MSC-13408 07
High-reliability release mechanism
LEWIS-11233 07
Ceramic backup ring prevents undesirable
weld-metal buildup
NUC-10357 07
Strain gage attachment by spot welding
reduces the fatigue strength of Ti-6Al-4V,
Rene 41, and Inconel X
LANGLEY-10930 04

BACTERIA

Elimination of gases and contamination
from water
KSC-10502 05
Simple chamber facilitates
chemiluminescent detection of bacteria
LANGLEY-10705 05
Bacterial adenosine triphosphate as a
measure of urinary tract infection
GSFC-11092 05
Instrument detects bacterial life forms
GSFC-10972 05
Improved vacuum probe collects
surface-contamination samples
LANGLEY-10623 05
Reusable anaerobic system for
microbiological studies - A concept
MSC-13920 05
Automatic agar tray inoculation device
LANGLEY-11074 05
Rapid detection of bacteria in foods and
biological fluids
GSFC-11738 05
Bacterial contamination monitor
GSFC-10879 05
Improved methods for counting bacteria
in physiological fluids
GSFC-11917 05
Rapid method for determination of
antimicrobial susceptibilities pattern of
urinary bacteria
GSFC-12039 05

BACTERICIDES

Salt stabilizer for preventing chlorine
depletion and increasing shelf-life of potable
water - A concept
MSC-17153 04
A silver ion water sterilization system
MSC-15734 04
Self-sterilizing polymers
M-FS-22054 04
Application of biological filters in water
treatment systems
JSC-14226 05
Polyelectrolytes with high charge
density
NPO-11918 04

BACTERIOLOGY

Analytical methods for bacterial kinetics
studies
LRL-10011 05
Automatic microbial transfer
LANGLEY-11354 05
Measuring micro-organism gas
production
LANGLEY-11326 05
Biodetection grinder
M-FS-22833 05
Detecting and measuring metabolic
byproducts by electrochemical sensing
LANGLEY-11525 05

Automated single-slide staining system
LANGLEY-11649 05

BAFFLES

Sorption vacuum trap
ERC-90051 06
Nondestructive assessment of
penetration of electron-beam welds
MSC-15955 08
Easy manual operation of overhead
garage doors - A concept
KSC-10555 07
Electrolysis cell functions as water vapor
dehumidifier and oxygen generator
ARC-10316 01
Dynamics of short pressure probes
LEWIS-11293 09
Improved molecular sorbent trap for
high-vacuum systems
ARC-10056 03
Baffle to confine glow discharge in ion
pump
M-FS-21575 03
Efficient baffle prevents oil
backstreaming in diffusion pumps
LRL-10025 07
Analysis and computer programs to
calculate acoustic wave properties of
baffled chambers
LEWIS-11529 09
A four-panel enclosure protects from
explosion
M-FS-21847 06
Floating baffle to improve efficiency of
liquid transfer from tanks
KSC-10639 07
Moisture-resistant baffle material for fuel
tanks
ARC-10861 04

BAGS

Counter lung
ARC-10248 05
Industrial filter bags cleaned by
high-frequency vibration: A concept
M-FS-24445 06

BAKING

Testing of brazed and welded
connections of stainless-steel tubing
M-FS-20806 08
Sorption vacuum trap
ERC-90051 06
Multilayer screen gives cathode ray tube
high contrast
ERC-10217 01

BALANCE

Quartz crystal microbalance use in
biological studies
NPO-11346 05
Simple turbine balancing test apparatus
LEWIS-11658 07

BALANCING

Dynamic balancing of high-speed rotary
machinery
HQ-10486 06

BALL BEARINGS

Fabrication of hollow ball bearings by
diffusion welding
LEWIS-11026 08
Test fixture insures high degree of
accuracy in flexure tests
NUC-10246 07
Drilled ball bearings - An approach to
extending bearing fatigue life at high
speeds
LEWIS-10856 07
Simple technique extends life of
angular-contact ball bearings
LEWIS-11117 07

BALLISTICS

Low-temperature radiation-resistant
material for ball-bearing retainers
NUC-10058 04

Peak wind speed anemometer
/maxometer/
M-FS-20916 07

Hydraulically operated tilt table
M-FS-21047 05

Fluid slip ring transfers coolant to rotating
equipment
MSC-13451 07

Series-hybrid bearing - An approach to
extending bearing fatigue life at high
speeds
LEWIS-11152 07

Resin additive improves performance of
high-temperature hydrocarbon lubricants
LEWIS-11364 04

Evaluation of rotating, incompressibly
lubricated, pressurized thrust bearings
LEWIS-11511 09

Low-friction ball-and-socket
NPO-11348 08

New full-complement ball bearing
lubrication technique
MSC-13850 07

Ball bearing protector
M-FS-21612 07

A system for early warning of bearing
failure
M-FS-21877 06

New detection method for rolling element
and bearing defects
M-FS-21911 06

Carbide factor predicts rolling-element
bearing fatigue life
LEWIS-11940 07

Heated bimetal strip prevents damage
of bearings by vibration
NPO-11870 06

Lightweight, high speed bearing balls:
A concept
LEWIS-11087 06

Long life, high speed, thrust-load ball
bearings
LEWIS-12269 06

BALLAST (MASS)
Stable, inflatable life raft for high seas
rescue operations
MSC-12393 05

Simple and effective method to lock buoy
position to ocean currents
M-FS-23140 06

BALLASTS (IMPEDANCES)
Oscillating tank circuit eliminates ballast
resistor in lamp control circuit
M-FS-20891 01

Uniform high irradiance source
LEWIS-12360 03

BALLISTIC TRAJECTORIES
Optimized braking of landing vehicles
with atmospheric drag
NPO-11402 06

BALLISTICS
Biaxial prestressing of brittle materials
M-FS-20272 04

Reducing streak film data via electronic
cross correlator
M-FS-18804 01

Rigid open-cell polyurethane foam for
cryogenic insulation
LEWIS-11220 04

Laser-scanning techniques for rapid
ballistics identification
NPO-11861 03

BALLOON SOUNDING

BALLOON SOUNDING

Wide-angle, circularly polarized,
omnidirectional-array antenna
GSFC-10928 B71-10033 01

BALLOONS

Inexpensive, large-diameter, radar
tracking and calibration spheres
XLA-11154 B71-10190 01
Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06

BALLS

Disc pack cleaning table saves computer
time
LANGLEY-10590 B70-10532 09
Long life, low cost ball valve, with lifted
seals and cartridge type construction
MSC-13430 B70-10653 07
A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06
Machine finishes balls to high degree
of roundness
M-FS-21448 B72-10595 08
Thermally actuated valve
NPO-11846 B73-10347 06

BALSA

Balsa wood as an energy dissipator
NPO-11839 B73-10388 04

BANDPASS FILTERS

Laser altimeter
M-FS-13691 B70-10196 02
Design procedure for improved active
filters
M-FS-20445 B70-10238 02
Block-coded communications
NPO-11397 B70-10242 02
A proposed laser measurement system
for determining surface contour
HQ-10326 B70-10263 02
A self-tuning filter
ARC-10264 B70-10337 01
Nonequal iteration directional filters
permit selective clearance of ripples in
passband circuits
ERC-10313 B70-10385 01
Multilayer screen gives cathode ray tube
high contrast
ERC-10217 B70-10454 01
Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
Multiloop distributed RC active
networks
ARC-10200 B71-10177 01
Tone-activated, remote, alert
communication system
NPO-11132 B71-10307 02
Tone-burst technique measures
high-intensity sound absorption
LANGLEY-10667 B71-10395 03
Signal to noise measurement circuit
GSFC-11239 B72-10102 01
Solar sensor with autocollimator
ARC-10148 B72-10192 03
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
Digital notch filter
KSC-10182 B73-10112 02
Real time statistical analysis of acoustic
emission signals for flaw monitoring
systems
M-FS-24402 B73-10212 03
Combined diplexer and harmonic filter
LEWIS-12059 B73-10410 02
High q band-pass resonators utilizing
composite band-stop resonator pairs
GSFC-10990 B74-10035 02

BANDWIDTH

Telemetry receiver
NPO-10746 B70-10008 02
Digital data transition tracking loop
improves data reception
NPO-10844 B70-10009 02
Graphical method to predict the dynamic
response of FM receivers
KSC-10111 B70-10119 01
Precision full-wave rectifier
ARC-10101 B70-10161 02
Reduction of background in an X-ray
proportional counter
HQ-10253 B70-10169 02
Methods for measuring the loudness and
noisiness of complex sounds
HQ-10332 B70-10260 03
A self-tuning filter
ARC-10264 B70-10337 01
Directional coupler for optical
waveguides
ERC-10094 B70-10381 03
Nonequal iteration directional filters
permit selective clearance of ripples in
passband circuits
ERC-10313 B70-10385 01
Signal phase switches offer greater
dynamic range
NPO-10709 B70-10393 01
New filter technique improves home
television reception
MSC-13729 B71-10141 02
A frequency division multiplex technique
for transmitting commands
KSC-10521 B71-10169 02
ELAS8 - Computer program for linear
structure equilibrium problems
NPO-11555 B71-10185 09
Tone-activated, remote, alert
communication system
NPO-11132 B71-10307 02
Multifunction audio digitizer for
communications systems
MSC-13855 B71-10318 02
Self-synchronizing, bi-orthogonal coded
PCM telemetry system
GSFC-11237 B71-10324 02
Double phase-lock loop with rapid
transient response - A concept
GSFC-10864 B71-10349 01
Tone-burst technique measures
high-intensity sound absorption
LANGLEY-10667 B71-10395 03
Waveshaping electronic circuit
M-FS-14916 B71-10429 01
Servo-controlled decoupler eliminates
oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06
Improving laser beam coherence - A
concept
ARC-10417 B71-10527 03
Third order digital-to-analog converter
MSC-12458 B72-10030 02
Aircraft communication via telefacsimile
system
M-FS-20839 B72-10139 02
Selecting digital filters
M-FS-20933 B72-10156 01
Differential input preamplifier
ARC-10489 B72-10165 01
Speed enhancement of complementary
MOS devices
ARC-10387 B72-10184 01
Projections of scan patterns on human
retina
ARC-10181 B72-10193 05

SUBJECT INDEX

Acoustic spectral analysis and testing
techniques
NPO-11554 B72-10341 03
A study of the power spectral density
of an FM signal
M-FS-21070 B72-10361 02
Frequency-to-amplitude converter: A
concept
MSC-12395 B72-10729 01
Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01
Power spectrum analysis of staggered
quadruphase-shift-keyed signals
MSC-14865 B75-10318 09

BARIUM
Detonation hazards with "safe" industrial
solvents
LANGLEY-10299 B70-10404 04

BARIUM COMPOUNDS
Ultraviolet reflective coating
GSFC-11786 B73-10469 04

BARIUM OXIDES
Progress in research on chlorate candle
technology
MSC-13409 B70-10258 04

BARIUM TITANATES
Dopant for sodium niobate capacitor
dielectric
MSC-11773 B70-10190 01
Temperature-independent resistor for
microelectronic circuits
HQ-10382 B70-10276 01

BARRIER LAYERS
Ohmic diode
HQ-10534 B70-10200 01
Heat-barrier coatings for combustion
chambers
M-FS-18618 B70-10363 07
Inhibiting Kirkendall void growth in
welded bimetallic structures
LEWIS-11573 B75-10006 08

BASALT
Spectral emission measurement of
igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04

BASE HEATING
Saturn S-2 base environment for flight
evaluation
M-FS-16597 B70-10555 09

BATHING
New system for bathing bedridden
patients
ARC-10745 B73-10272 05

BATHS
Self-replaceable thermocouple for molten
steel bath - A concept
NUC-10223 B71-10125 01
Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Temperature control of a cryogenic
bath
HQ-10788 B72-10532 03
Dichromated-gelatin hologram process
for improved optical quality
M-FS-23170 B75-10099 03

BATTERY CHARGERS
Development of a silver-zinc battery
system
NPO-11444 B70-10718 02
An ampere-hour meter for batteries
M-FS-22067 B73-10118 02
Rechargeable, silver-zinc battery
conditioner/monitor unit and
state-of-charge indicator
M-FS-22835 B73-10486 02

SUBJECT INDEX

Radioisotope thermal generator (RTG) power conditioner
 LANGLEY-11313 B74-10022 03
 Solar array deployment from a spinning spacecraft
 ARC-10787 B74-10048 06
 Battery activation system
 ARC-10832 B74-10056 03
BAYES THEOREM
 Optimizing designs of two-level factorial experiments given partial prior information (NAMER)
 LEWIS-11708 B72-10726 09
BEADS
 Two-directional-flow, axial-motion-joint flow liner
 M-FS-16215 B70-10166 06
 Covalent bonding of antibodies of polystyrene latex beads: A concept
 MSC-13906 B72-10006 05
BEAM CURRENTS
 Laser device provides accurate reference to true gravitational vertical
 ARC-10444 B71-10479 07
BEAM LEADS
 Development of chip passivated monolithic complementary MISFET circuits with beam leads
 M-FS-22264 B72-10696 01
BEAM SPLITTERS
 Holographic stress analysis
 M-FS-20687 B70-10123 01
 High efficiency optical beamsplitter designed for operation in the infrared region
 GSFC-10721 B70-10211 02
 Holographic photography of high velocity particles
 ERC-10318 B70-10371 03
 Automatic optometer operates with infrared test pattern
 ARC-10095 B70-10401 05
 Interferometer for measurement of optical polarization
 NPO-11239 B70-10405 03
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03
 Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 B71-10232 03
 Laser vibration analyzer
 XAC-01670 B71-10249 03
 Optical probing of supersonic flows with statistical correlation
 M-FS-20642 B71-10252 03
 Variable ratio beam splitter for laser applications
 ARC-10391 B71-10265 03
 Remote control radioactive-waste removal system uses modulated laser transmitter
 LANGLEY-10311 B71-10343 03
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Miniature carbon dioxide sensor
 MSC-13332 B71-10536 03
 Liquid-helium-cooled Michelson interferometer
 ARC-10554 B72-10217 03

Interferometric rotation sensor
 ARC-10278 B72-10274 03
 Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03
 Unsupported thin film beam splitter
 GSFC-10525 B72-10471 02
 Oscillation of laser-beam intensity as observed with beam splitters
 ARC-10694 B72-10572 03
 Visual alignment aid
 LANGLEY-11842 B75-10228 03
 Signal mixer for optical heterodyne receiver
 M-FS-23251 B75-10307 03
BEAM WAVEGUIDES
 Dual-frequency feed-horn antenna
 GSFC-10820 B71-10056 02
 Diffused guides for distributed-feedback lasers
 NPO-13544 B75-10206 03
 Collimation of electron and X-ray beams using zeolite crystals
 NPO-13557 B75-10329 03
BEAMS (RADIATION)
 Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
 M-FS-20476 B71-10016 01
 Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Enhancing efficiency of single, large-aperture antennas
 HQ-10597 B71-10287 01
 Optical design and analysis program
 GSFC-11393 B71-10456 09
 Conical electromagnetic radiation flux concentrator
 M-FS-21613 B72-10147 03
BEAMS (SUPPORTS)
 Hoop restraint on beam-column behavior in a stiffened cylindrical shell
 M-FS-16172 B70-10394 06
 Synthesis of dynamic systems
 M-FS-21490 B71-10491 09
 Remote weighing device
 M-FS-21556 B72-10325 07
BEARING
 Inorganic glass ceramic slip rings
 M-FS-20711 B72-10313 04
BEARING (DIRECTION)
 Improved manual radio frequency direction finder
 M-FS-20507 B70-10422 02
 LEAPS (Laser electro-optical alignment pole for surveying)
 GSFC-11262 B73-10122 02
 Bidirectional zoom antenna
 GSFC-11862 B74-10257 01
BEARING ALLOYS
 Long life, high speed, thrust-load ball bearings
 LEWIS-12269 B75-10022 06
BEARINGS
 Low-cost orbiting grinder for cutting ducts
 M-FS-20684 B70-10126 07
 Removal of flowmeter bearings from blind cavities
 M-FS-18713 B70-10227 06
 Technique for improving hydrodynamic gyro bearings
 M-FS-20764 B70-10301 06

BEAT FREQUENCIES

Low cost lobed bearing
 LEWIS-11076 B70-10343 07
 Liquid cryogenic lubricant
 LEWIS-11075 B70-10347 07
 Small hydraulic turbine drives
 LEWIS-11064 B70-10416 07
 Dynamic balancing of high-speed rotary machinery
 HQ-10486 B70-10433 06
 High-temperature electric stator
 LEWIS-10889 B70-10459 01
 New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06
 Special wrench for B-nuts reduces torque stress in tubing
 MSC-15885 B70-10550 07
 Filled polymers for bearings and seals used in liquid hydrogen
 LEWIS-10887 B70-10573 04
 Filler-wire positioner for electron beam welding
 MSC-15637 B70-10604 08
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 Hydrostatic liquid-bearing for precision gyro
 M-FS-21138 B71-10207 07
 Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04
 Common bearing material has highest fatigue life at moderate temperature
 LEWIS-11592 B72-10382 04
 Research on bearing lubricants for use in a high vacuum
 M-FS-22119 B72-10469 04
 Freon 21 bearing lubrication and coolant system
 HQ-10302 B72-10651 06
 High torque bellows seal rotary drive
 LEWIS-11813 B72-10681 07
 An electric motor with magnetic bearings: A concept
 XGS-07805 B73-10304 01
 Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
 LEWIS-11930 B74-10016 04
 Computer program for flexible rotor dynamics analysis
 LEWIS-12153 B74-10084 09
 Design criteria monograph for valve components
 LEWIS-12327 B74-10087 06
 Magnetic bearings with combined radial and axial control
 GSFC-11551 B74-10131 06
 Improved magnetic suspension technique
 GSFC-11079 B74-10254 03
 Torque control system
 GSFC-11077 B75-10085 06
 Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
 LEWIS-12514 B75-10151 06
 Single radial magnetic bearing: A concept
 GSFC-11978 B75-10251 06
BEAT FREQUENCIES
 Laser-Doppler gas velocimeter
 M-FS-20583 B70-10143 02
 System automatically tunes hydrogen masers
 HQ-10502 B70-10616 02

BEDS (PROCESS ENGINEERING)

SUBJECT INDEX

BEDS (PROCESS ENGINEERING)

Continuous catalytic decomposition of methane

ARC-10339 B73-10016 03

BELLOWS

Vibration damping of mechanical seals

M-FS-14160 B70-10068 07

Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel

M-FS-18712 B70-10092 04

Thermostatic expansion valve improved by dual pneumatic modulation

KSC-10072 B70-10101 07

Design and development criteria for metal bellows

M-FS-20640 B70-10125 05

Two-directional-flow, axial-motion-joint flow liner

M-FS-16215 B70-10166 06

An electrothermally actuated micro valve

NPO-10730 B70-10171 07

Investigation of positive shaft seals

M-FS-18589 B70-10176 07

Flueric-controller pneumatic stepping motor system

LEWIS-11051 B70-10332 02

Flexible protection for metal bellows

KSC-10520 B70-10350 06

Concept for a gas operated actuator

NPO-11340 B70-10516 07

Pilot-booster control valve

M-FS-20635 B70-10558 07

Adjustable support spring

ARC-10203 B70-10636 07

Long life, low cost ball valve, with lifted seals and cartridge type construction

MSC-13430 B70-10653 07

Predicting vibrational failure of flexible ducting

M-FS-16750 B71-10150 06

Liquid-fuel valve with precise throttling control

NPO-10808 B71-10449 07

Feedback control of variable conductance heat pipes

ARC-10460 B72-10169 03

Vortex servovalve for fluidic or electrical input

ARC-10155 B72-10173 07

Balanced-bellows spirometer

XAC-01547 B72-10279 05

Prediction of flow-induced failures of braided flexible hoses and bellows

M-FS-19004 B72-10407 06

Analytical failure determination of flow-induced fatigue in bellows

M-FS-18178 B72-10488 06

Improved high-temperature gimbal joint

LEWIS-11705 B72-10489 06

Linear accelerator: A concept

KSC-10618 B72-10636 06

High torque bellows seal rotary drive

LEWIS-11813 B72-10681 07

Gas-operated actuator: A concept

NPO-11369 B73-10133 03

BELTS

Tool carrier

M-FS-21469 B72-10319 07

Quick-donning backpack harness

LANGLEY-10102 B72-10641 05

Instrument for measuring thin-film belt lengths

NPO-13149 B73-10455 06

BENDING

Split radius-form blocks for tube benders

MSC-15773 B70-10038 08

Mechanical characteristics of the Bossler coupling

HQ-10508 B70-10072 07

Integrated circuit flat-pack lead bender

MSC-13489 B70-10117 01

Flexible protection for metal bellows

KSC-10520 B70-10350 06

X-connectors for tubing - Feasibility study

M-FS-20827 B70-10418 07

Method of joining metals of significantly different expansion rates

NPO-12076 B71-10028 08

Flat-conductor cable has rotary and linear flexibility

M-FS-21096 B71-10242 01

Structural behavior of tapered inflated fabric cylinders under various loading conditions

MSC-15317 B71-10327 06

Folding tools for flat conductor cable harnesses

M-FS-20121 B71-10415 08

Energy absorber uses expanded coiled tube

AEC-10044 B72-10239 06

Isogrid structure

M-FS-21567 B72-10323 06

Micro-scale crease-and-fold apparatus

NPO-12029 B72-10552 06

Beam lead forming tool

M-FS-22133 B73-10098 07

Suppression of bending motion in elastic bodies

XAC-05632 B74-10070 06

New design of hingeless helicopter rotor improves stability

ARC-10807 B75-10132 06

BENDING FATIGUE

Carbide factor predicts rolling-element bearing fatigue life

LEWIS-11940 B73-10008 07

BENDING MOMENTS

Testing filamentary composites

HQ-10268 B70-10004 04

Integrator for on-line measurement of buffet signals

LANGLEY-10627 B70-10639 02

Method for calculating the stresses in pressure vessels

MSC-13515 B71-10514 06

BENTONITE

Protective coating for salt-bath brazing

LEWIS-90255 B71-10381 08

BERNOULLI THEOREM

Novel valve for reciprocating compressors - Concept

MSC-15060 B70-10160 07

BERYLLIUM

Unidirectional composite stiffening

HQ-10266 B70-10054 04

Formulas establish audio range inductance in beryllium coils

M-FS-14244 B70-10281 02

High precision cryogenic thermal conductivity standards

NUC-10555 B70-10310 04

Detonation hazards with "safe" industrial solvents

LANGLEY-10299 B70-10404 04

Strain gage installation manual

M-FS-18822 B70-10715 06

Beryllium thin films for resistor applications

ARC-10485 B72-10021 01

GaAs transistors formed by Be or Mg ion implantation

LANGLEY-11204 B73-10442 01

BERYLLIUM ALLOYS

Effects of high pressure hydrogen on metals

M-FS-18612 B70-10162 04

Molding procedure for casting a variety of alloys

ARC-10358 B70-10512 08

Flexible pivot mount eliminates friction and hysteresis

M-FS-20725 B70-10577 07

BERYLLIUM COMPOUNDS

Hermetically sealed motion transmitter

MSC-17348 B71-10328 07

BERYLLIUM OXIDES

Readily fiberizable glasses having a high modulus of elasticity

HQ-10593 B70-10432 04

Flexible electrical conductors for high-temperature switchgear

LEWIS-11109 B70-10569 01

BESSEL FUNCTIONS

Indefinite integrals of products of some exponential and trigonometric functions

LEWIS-11493 B72-10225 09

Zeros of certain cross products of Bessel functions of fractional order

LEWIS-12221 B74-10012 03

BETA PARTICLES

Scintillation detector for carbon-14

ARC-10378 B71-10144 03

Superconductor transition temperatures study

M-FS-21247 B71-10385 03

BIAS

A range-rate extraction unit for determining Doppler effect

GSFC-10750 B70-10025 01

Wide-range pulse-height discriminator

GSFC-10837 B70-10053 01

Transistor bonding pad configuration for uniform injection and low inductance

GSFC-10790 B70-10181 01

Two terminal current limiter

NPO-11350 B70-10232 01

Multiport semiconductor devices

ERC-10293 B70-10448 01

Semiconductor cooling by thin-film thermocouples

ERC-10149 B70-10495 01

A power semiconductor test circuit with reduced power requirements

LEWIS-11175 B70-10498 01

Characteristics of step-recovery-diode frequency multipliers

M-FS-20558 B70-10505 01

Circuit minimizes current drain caused by neon indicator lamps

NUC-10157 B70-10534 01

A new solid-state logarithmic radiometer

ARC-10287 B70-10633 02

Traveling-wave photodetector has sub-nanosecond response

GSFC-10831 B70-10641 02

Composite metal-oxide device has voltage sensitive capacitance

HQ-10594 B70-10687 01

Universal interface enables one recorder to serve numerous measuring instruments

M-FS-15134 B71-10011 01

SUBJECT INDEX

Study of second breakdown in power transistors using infrared techniques
M-FS-20748 B71-10021 01
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
Laser vibration analyzer
XAC-01670 B71-10249 03
Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 B71-10275 01
Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
Variable-gap bias structure for magnetic bubble memory package
LANGLEY-11765 B75-10221 01

BIBLIOGRAPHIES

Systems of coding and their implementation
NPO-11469 B71-10006 09
Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08
Wind energy utilization: A bibliography
LEWIS-12518 B75-10136 02
Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
LEWIS-12502 B75-10138 03
Fracture toughness testing data: A technology survey and bibliography
LEWIS-12503 B75-10139 03

BILLETS

Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06

BIMETALS

Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
Thermally stable structural framework
ARC-10612 B72-10252 08
A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07
Heated bimetal strip prevents damage of bearings by vibration
NPO-11870 B73-10348 06

BINARY ALLOYS

Directionally solidified superalloy
HQ-10522 B70-10058 04
Superconductor transition temperatures study
M-FS-21247 B71-10385 03

BINARY CODES

Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01
Self-synchronizing, bi-orthogonal coded PCM telemetry system
GSFC-11237 B71-10324 02
Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 B71-10517 02
Binary concatenated coding system
JSC-14082 B73-10083 09

BINARY DATA

Digital frequency discriminator
M-FS-14322 B70-10010 01
Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01

Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01
Signal phase switches offer greater dynamic range
NPO-10709 B70-10393 01
Digital simulation program improved
M-FS-01504 B70-10705 09
Systems of coding and their implementation
NPO-11469 B71-10006 09
Fast carry accumulator design
M-FS-20902 B71-10274 01
Novel shift register eliminates logic gates and power switching circuits
GSFC-10517 B71-10322 01
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01
A simplified, compact static shift register
HQ-10723 B72-10591 02
Frequency-to-amplitude converter: A concept
MSC-12395 B72-10729 01
Minimal hardware, binary sequence pseudonoise generator and detector
NPO-11406 B73-10292 01
Processor for high-density digital tape-recorded signals
NPO-11399 B73-10354 02
Synchronizer for random binary data
NPO-13286 B75-10325 02

BINARY DIGITS

Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 B70-10447 05
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
Efficient digital comparison technique for logic circuits
M-FS-21080 B71-10218 02
Minimum switching network for generating the weight of a binary vector
NPO-11590 B73-10274 09

BINARY FLUIDS

Fluidic device for measuring constituent masses of a flowing binary gas mixture
LEWIS-11995 B73-10230 06

BINARY MIXTURES

Three bit mass spectral search program
NPO-11960 B72-10747 09
Binary alloys for refractory-metal brazing
LEWIS-12184 B74-10125 08

BINARY TO DECIMAL CONVERTERS

Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09
High speed direct-binary to binary-coded-decimal converter and scaler
KSC-10326 B73-10281 02

BINDERS (MATERIALS)

Design and evaluation of three-phase fibrous composite structures
HQ-10267 B70-10205 04
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
New type of nonflammable paper
MSC-13432 B70-10546 04

BIOENGINEERING

Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
Improved fire-resistant coatings
GSFC-10072 B71-10198 04
Research on bearing lubricants for use in a high vacuum
M-FS-22119 B72-10469 04
Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04
New type of trifunctional alcohol
NPO-10714 B72-10553 04

BINOCULAR VISION

Miniaturized haploscope for testing binocular vision
ARC-10759 B73-10492 05

BINOCULARS

Miniaturized haploscope for testing binocular vision
ARC-10759 B73-10492 05

BIOACOUSTICS

Improved ultrasonic biomedical measuring apparatus
ARC-10597 B72-10695 05

BIOASSAY

Biological handbook for engineers
M-FS-20349 B70-10255 05
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
Statistical analysis tables for truncated or censored samples
M-FS-21024 B71-10351 03
Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
Micro-organism distribution sampling for bioassays
LANGLEY-10789 B74-10289 05
Automated mass spectrometer/analysis system: A concept
NPO-13572 B75-10331 05

BIOCHEMISTRY

Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 B72-10006 05
Silver stain for electron microscopy
ARC-10661 B72-10415 05
Automated method for study of drug metabolism
ARC-10469 B73-10030 04
Zeta potential control for electrophoresis cells
M-FS-22333 B73-10260 04
Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04
Polyelectrolytes with high charge density
NPO-11918 B74-10159 04

BIOENGINEERING

Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 B75-10148 05
Lightweight orthotic braces
LANGLEY-11894 B75-10303 05

BIOINSTRUMENTATION

SUBJECT INDEX

BIOINSTRUMENTATION

Contourograph display system for monitoring electrocardiograms
 MSC-13407 B70-10030 05
 Multi-frequency resonant antenna
 HQ-10215 B70-10098 02
 Electronic sleep analyzer
 MSC-13282 B70-10110 02
 Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
 Technique for analyzing human respiratory process
 MSC-13436 B70-10528 05
 Human performance measuring device
 LANGLEY-10679 B70-10619 05
 Hydraulically operated tilt table
 M-FS-21047 B71-10024 05
 Conductive elastomeric extensometer
 M-FS-21049 B71-10032 01
 Miniature grinder for solid specimens
 M-FS-20005 B71-10059 05
 Quartz crystal microbalance use in biological studies
 NPO-11346 B72-10243 05
 Blood pressure measurement and display system
 MSC-13036 B72-10334 05
 Improved ultrasonic biomedical measuring apparatus
 ARC-10597 B72-10695 05
 Flexible electroencephalogram (EEG) headband
 LANGLEY-10927 B73-10048 05
 Microminiaturized, biopotential conditioning system (MBCS)
 JSC-14180 B73-10236 02
 Electroschock protection circuit
 JSC-14222 B73-10261 02
 Automated monitoring of recovered water quality
 LANGLEY-11203 B74-10029 05
 Bio-isolated DC operational amplifier
 ARC-10596 B74-10112 01
 Thermistor holder for skin-temperature measurements
 ARC-10855 B74-10119 05
 Finger recording electrode system for electrical impedance plethysmograph
 ARC-10816 B74-10172 05
 Reference apparatus for medical ultrasonic transducer
 ARC-10753 B74-10197 01
 In vivo measurement of mechanical impedance of bone
 ARC-10857 B74-10245 05
 Portable automatic blood analyzer
 MSC-14627 B75-10041 05
 Subminiature transducers for measuring forces and deformation of heart muscle
 NPO-13423 B75-10051 05
 Hand tremor and activity sensor
 ARC-10849 B75-10057 05
 Catheter-tip force transducer for cardiovascular research
 NPO-13643 B75-10211 05
 Dip molding to form intricately-shaped medical elastomer devices
 NPO-13535 B75-10238 08
BIOLOGICAL EFFECTS
 A process yields large quantities of pure ribosome subunits
 HQ-10662 B72-10653 05
 A study of radiation environment in space and its biological effects
 HQ-10798 B72-10662 03

In vivo measurement of mechanical impedance of bone
 ARC-10857 B74-10245 05
BIOLGY
 Biodetection grinder
 M-FS-22833 B73-10474 05
BIOLUMINESCENCE
 Bacterial adenosine triphosphate as a measure of urinary tract infection
 GSFC-11092 B71-10051 05
 Instrument detects bacterial life forms
 GSFC-10972 B71-10312 05
 A reusable prepositioned ATP reaction chamber
 HQ-10660 B72-10525 05
 Improved methods for counting bacteria in physiological fluids
 GSFC-11917 B74-10231 05
BIOMEDICAL DATA
 Slide checkout console
 MSC-12318 B70-10290 02
 Post-operative cranial pressure monitoring system
 ERC-10336 B70-10436 05
 Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 B70-10447 05
 Fabrication of electroacoustic RF amplifiers
 ERC-10266 B70-10460 01
 Biomedical recording system
 MSC-13653 B70-10697 05
 Tilt table for ergometers and other biomedical devices
 M-FS-21010 B71-10241 05
 A system for automatic analysis of blood pressure data for digital computer entry
 LEWIS-11751 B72-10632 05
 Improved biomedical electrode
 MSC-13648 B72-10642 05
 Bipotential monitoring with inexpensive office-type cassette recorders
 M-FS-22566 B73-10167 02
 Data processing large quantities of multispectral information
 MSC-14472 B75-10080 03
BIOMETRICS
 Improved biomedical electrode
 MSC-13648 B72-10642 05
 A new dry biomedical electrode
 JSC-14321 B73-10146 02
BIOPHYSICS
 Improved ultrasonic biomedical measuring apparatus
 ARC-10597 B72-10695 05
BIOTECHNOLOGY
 New urea-absorbing polymers for artificial kidney machines
 NPO-13620 B75-10336 04
BIOTELEMETRY
 Multi-frequency resonant antenna
 HQ-10215 B70-10098 02
 Log amplifier instrument measures physiological biopotentials over wide dynamic range
 ARC-10032 B70-10508 01
 RF-controlled implantable solid state switch
 ARC-10136 B71-10426 01
 Coaxial inverted geometry epitaxial transistor
 ARC-10330 B72-10056 01
 A differential ECG amplifier with single-ended output
 ARC-10411 B72-10061 05

Narrowband, crystal-controlled biomedical telemetry system
 ARC-10708 B72-10255 01
 Protective encapsulation of implantable biotelemetry units
 ARC-10514 B72-10301 05
 Microminiaturized, biopotential conditioning system (MBCS)
 JSC-14180 B73-10236 02
 Eight-channel telephone telemetry system
 JSC-14452 B73-10320 05
 Time-control system for communication between data-collection and orbiting
 GSFC-11182 B74-10088 02
 Compact telemetry package for remote monitoring of neutron responses in animals
 NPO-11887 B74-10103 05
 Heart-rate pulse-shift detector
 ARC-10729 B74-10196 01
BIREFRINGENCE
 Variable ratio beam splitter for laser applications
 ARC-10391 B71-10265 03
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Light-direction sensor based on birefringency
 NPO-11201 B73-10131 03
 Wide-field birefringent elements
 MSC-12677 B75-10105 03
BISMUTH
 Manganese bismuth thin film for large capacity digital memories
 M-FS-21246 B72-10107 03
BISMUTH ALLOYS
 Coercive force of thin magnetic films
 NPO-10750 B70-10221 03
 Removal of filler material from large high energy formed parts
 M-FS-16326 B72-10104 06
BISMUTH COMPOUNDS
 Magnetometer uses bismuth-selenide
 LEWIS-11632 B72-10629 03
BISMUTH TELLURIDES
 Thin film thermoelectric devices as thermal control coatings: A study
 M-FS-21384 B73-10153 04
 Thermoelectrically-cooled quartz microbalance
 M-FS-23101 B75-10076 04
BISPENOLS
 Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
 LEWIS-11261 B71-10261 04
 Instant acting adhesive system
 MSC-13732 B71-10317 04
 New primers for adhesive bonding of aluminum alloys
 M-FS-21387 B71-10488 04
BISTABLE CIRCUITS
 Switching circuits with fast response and low power drain
 GSFC-10878 B70-10250 01
 RF-controlled implantable solid state switch
 ARC-10136 B71-10426 01
BIT SYNCHRONIZATION
 Digital demodulation with data subcarrier tracking
 NPO-10858 B70-10518 02

SUBJECT INDEX

Improved convolutional coding
MSC-13625 B70-10698 09
An improved learning decoder
MSC-14070 B72-10573 02
All-digital phase-lock loops for noise-free signals
NPO-11914 B73-10350 01
A hybrid general-purpose bit synchronizer
MSC-14330 B75-10169 02

BITS
Array multiplier
ERC-90076 B70-10047 02
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09
An improved telemetry system
ARC-10336 B71-10201 01
Multifunction audio digitizer for communications systems
MSC-13855 B71-10318 02
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07
High efficiency telemetry method
NPO-10388 B71-10371 02
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Three bit mass spectral search program
NPO-11960 B72-10747 09

BLACK BODY RADIATION
An improvement in blackbody cavity design
LANGLEY-10292 B70-10711 03
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 B72-10606 09

BLADES
Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09

BLADES (CUTTERS)
Portable lightweight bandsaw
M-FS-16927 B71-10237 07
Sprue cutoff tool for molded FCC plugs
M-FS-20236 B71-10421 08
Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 B71-10460 08
Hot-blade stripper for polyester insulation on FCC
M-FS-20117 B71-10461 08
Rotary stripper for shielded and unshielded FCC
M-FS-20119 B71-10465 08

BLAST DEFLECTORS
A four-panel enclosure protects from explosion
M-FS-21847 B72-10613 06

BLOCKING
Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06

A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05

BLOCKS
Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07
Universal inverted flexure
ARC-10345 B72-10122 07

BLOOD
Combination syringe provides air-free blood samples
MSC-12320 B70-10545 05
Gas chromatography of volatile organic compounds
JSC-14428 B73-10406 04
Automated drug identification system
NPO-13063 B74-10213 05
Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
Portable automatic blood analyzer
MSC-14627 B75-10041 05
Covalent bonding of polycations to small polymeric particles
NPO-13487 B75-10327 04

BLOOD CIRCULATION
An efficient, simple dialyzer
HQ-10741 B72-10522 05

BLOOD FLOW
Control system for an artificial heart
LEWIS-11057 B70-10469 05
Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05

BLOOD PLASMA
Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05

BLOOD PRESSURE
Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
Biomedical recording system
MSC-13653 B70-10697 05
Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
Blood pressure measurement and display system
MSC-13036 B72-10334 05
Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
A system for automatic analysis of blood pressure data for digital computer entry
LEWIS-11751 B72-10632 05
Automated analysis of blood pressure measurements (Korotkov sound)
MSC-13999 B72-10756 05
Compact telemetry package for remote monitoring of neutron responses in animals
NPO-11887 B74-10103 05
Implantable prosthetic pump boosts blood pressure: A concept
NPO-13626 B75-10177 05

BLOWDOWN WIND TUNNELS
Short-duration, transonic flow, variable-porosity test section
M-FS-20509 B70-10256 03

BODY FLUIDS

BLOWERS
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
Aircrew oxygen system
ARC-10247 B72-10195 05
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Miniature high pressure regulator
ARC-10428 B72-10211 07
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

BLOWING
Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
An economical vent cover
M-FS-20692 B72-10348 07

BLOWOUTS
An economical vent cover
M-FS-20692 B72-10348 07

BLUNT BODIES
Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
LANGLEY-11048 B72-10067 09
Computer program to determine pressure distributions and forces on blunt bodies of revolution
LANGLEY-11197 B73-10362 09

BOARDS (PAPER)
Foldable patterns form construction blocks
MSC-13860 B71-10523 08
Alignment fixture for precision cutting of printed-wiring boards
LANGLEY-11658 B74-10290 01

BOATS
Simple and effective method to lock buoy position to ocean currents
M-FS-23140 B75-10095 06
Highly-visible air-sea rescue marker
MSC-12564 B75-10166 05
Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 B75-10282 06

BODIES OF REVOLUTION
Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
Geometrically nonlinear static and dynamic analysis of arbitrarily loaded shells of revolution
LANGLEY-11109 B72-10504 09
Computer program to determine pressure distributions and forces on blunt bodies of revolution
LANGLEY-11197 B73-10362 09
Computer program for stress, vibration, and buckling characteristics of general shells of revolution
LANGLEY-11369 B73-10363 09
Computer program for numerical analysis of stiffened shells of revolution
M-FS-23027 B75-10094 09

BODY FLUIDS
Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05

BODY MEASUREMENT (BIOLOGY)

Rapid detection of bacteria in foods and biological fluids
 GSFC-11738 873-10045 05
 Liquid sample processor
 NPO-13136 874-10278 05
 Improved extraction technique for biological fluids
 NPO-13084 875-10045 05
 Automated mass spectrometer/analysis system: A concept
 NPO-13572 875-10331 05

BODY MEASUREMENT (BIOLOGY)

A differential ECG amplifier with single-ended output
 ARC-10411 872-10061 05

BODY SIZE (BIOLOGY)

Seat belt restraint system
 ARC-10519 872-10692 06

BODY TEMPERATURE

Post-operative cranial pressure monitoring system
 ERC-10336 870-10436 05
 Biomedical recording system
 MSC-13653 870-10697 05
 Implanted telemeter for electrocardiogram and body temperature
 XAC-08505 872-10035 05
 Time-lapse camera for microscopy
 ARC-10423 872-10125 05
 An ingestible temperature-transmitter
 ARC-10583 872-10275 01
 Improved temperature control of liquid cooling garments
 MSC-13917 872-10281 05
 Microminiaturized, biopotential conditioning system (MBCS)
 JSC-14180 873-10236 02
 Flexible temperature probe for biological systems
 ARC-10796 873-10498 05
 Compact telemetry package for remote monitoring of neutron responses in animals
 NPO-11887 874-10103 05

BODY-WING AND TAIL

CONFIGURATIONS

Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow
 LANGLEY-11305 873-10470 06

BOILERS

Inexpensive tamper proof safety relief valve
 KSC-10470 870-10320 07
 Single-phase heat transfer improved by helical inserts in tubes
 LEWIS-11063 870-10362 07
 Boiler for generating high quality vapor
 LEWIS-11345 872-10135 06
 Closed-cycle power supply for fluidic control systems
 ARC-10480 872-10163 06
 Computer method for identification of boiler transfer functions
 LEWIS-11808 872-10582 09
 Experimental study of flow distribution with circumferential manifolds
 LEWIS-11649 872-10738 06

BOILING

Quick, easy to prepare freeze-dried soups
 MSC-14003 872-10017 05
 Multipurpose top for liquid helium Dewar
 ARC-10533 872-10302 03

Temperature control of a cryogenic bath
 HQ-10788 872-10532 03

BOLOMETERS

Simplified method for measuring the impedance of RF power sources - A concept
 NPO-10734 870-10212 02
 Pulse excitation of bolometer bridges
 ARC-10292 872-10054 01
 Vibrating ribbon bolometer: A concept
 XAC-10768 872-10170 03

BOLTS

Self-forming shim or gasket for mounting heavy equipment
 KSC-10504 870-10289 07
 Comparison of release torques of tightened bolts in vacuum and air
 M-FS-20773 870-10395 06
 Automatic, computerized testing of bolts
 NPO-11090 870-10657 06
 Instrument accurately measures stress loads in threaded bolts
 M-FS-21121 871-10486 01
 Joint preload properties of structural threaded fasteners
 M-FS-21453 871-10531 08
 Squib-actuated disconnect device
 NPO-11544 872-10097 06
 Metallic composites as high-temperature fasteners
 M-FS-22438 873-10081 04

BOLTZMANN TRANSPORT EQUATION

Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
 M-FS-21924 872-10316 01

BONDING

Thermal-difference compensation for structural members
 M-FS-20433 870-10014 07
 Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 870-10018 01
 Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 870-10021 01
 Electrical resistance determination of actual contact area of cold welded metal joints
 HQ-10472 870-10084 04
 Phenolic cutter for machining foam insulation
 M-FS-14170 870-10089 07
 Transistor bonding pad configuration for uniform injection and low inductance
 GSFC-10790 870-10181 01
 Motor brush wear measured with strain gages
 GSFC-10886 870-10266 01
 Development of lightweight cryogenic tank supports
 M-FS-20726 870-10291 07
 Strain gage load measuring device - A concept
 MSC-13385 870-10326 01
 Strain compatibility tests for sprayed foam cryogenic insulation
 M-FS-16063 870-10423 04
 Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10277 870-10445 03

SUBJECT INDEX

Technique for depositing silicon dioxide on indium arsenide improves adhesion
 ERC-10130 870-10475 04
 Glass-to-metal bonding process improves stability and performance of semiconductor devices
 ERC-10264 870-10477 01
 Improved cover for cadmium sulfide solar cells
 LEWIS-11003 870-10584 01
 High-temperature oxidation and erosion-resistant refractory coatings
 LEWIS-11221 870-10634 04
 Improvement of adhesive-bonded structural joints
 M-FS-20876 870-10663 08
 Improved protection for silicon solar cells
 LEWIS-11065 870-10706 08
 Strain gage installation manual
 M-FS-18822 870-10715 06
 Improved method for cladding the inside of metal tubes
 LEWIS-11174 870-10723 08
 Ultrasonics used for high-precision nondestructive inspection of brazed joints
 NUC-10352 871-10045 08
 Induction brazing manual
 M-FS-14924 871-10123 08
 Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 871-10154 04
 New understanding of fiber composite materials
 NPO-11605 871-10161 04
 Improved reversible coulometer cell
 SAN-10051 871-10176 02
 Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
 M-FS-21160 871-10208 04
 Instant acting adhesive system
 MSC-13732 871-10317 04
 Explosive bonded TSM-wire-reinforced C129Y columbium composites
 M-FS-20925 871-10356 04
 Cold-blade stripper for polyimide and TFE insulation on FCC
 M-FS-20115 871-10460 08
 Exothermic brazing units
 M-FS-21435 871-10467 08
 New primers for adhesive bonding of aluminum alloys
 M-FS-21387 871-10488 04
 Nondestructive testing of bond integrity in foam insulation/aluminum composites
 M-FS-20786 871-10507 06
 Copper/nickel eutectic brazing of titanium
 ARC-10337 871-10525 08
 Specimen for high-temperature tensile tests
 ARC-10531 872-10028 04
 Aluminum foil interconnects for solar cell panels
 ARC-10374 872-10058 08
 Optical bonding agents for severe environments
 ARC-10459 872-10063 04
 Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 872-10177 02
 High strength, medium density molded foam
 AEC-10053 872-10235 04
 Failure in glass
 AEC-10088 872-10364 04

SUBJECT INDEX

Bondability of RTV silicon rubber
AEC-10026 B72-10367 04

Boron aluminum composite structures
M-FS-21571 B72-10386 04

An improved apochromatic wedge
utilizing optical molecular contact bonding
GSFC-11082 B72-10388 03

Built-in bleeder system in laminated
plastic structures
MSC-17713 B72-10562 08

An approach to real-time process control
of semiconductor wire-bonding
M-FS-21558 B72-10644 08

Fatigue of boron-aluminum composites
bonds and joints
M-FS-22325 B73-10079 04

Self-adjusting assembly jig
LEWIS-12034 B73-10250 07

Eutectic bonding of sapphire to
sapphire
GSFC-11577 B73-10284 08

Materials data handbook on titanium
6Al-4V
M-FS-22796 B73-10372 04

Materials data handbooks on aluminum
alloys
M-FS-22798 B73-10373 04

Manufacture of large, lightweight
parabolic antennas
ARC-10741 B73-10375 08

Adhesive coating eliminated in new
honeycomb-core fabrication process
LANGLEY-11134 B73-10439 08

Strain arrestor plate for mounting rigid
insulating tiles
JSC-14182 B73-10465 06

Glass fiber addition strengthens
low-density ablative compositions
LANGLEY-11288 B74-10027 04

Fabrication of complex structures or
assemblies by Hot Isostatic Pressure (HIP)
welding
LEWIS-11490 B74-10124 04

Controlled intermittent interfacial bond
concept for composite materials
LANGLEY-11628 B74-10264 04

New insulation attachment method
eliminates compatibility bondline stresses
MSC-12615 B74-10269 07

Process for preparing polyimide
adhesives
LANGLEY-11397 B75-10257 08

Low-Cost thin-layer silicon solar cells
GSFC-12023 B75-10293 04

Quality control of microelectronic wire
bonds
M-FS-23327 B75-10312 01

BONES

Weight simulator
ARC-10100 B72-10046 05

Cutting thin sections of bone
ARC-10555 B72-10303 05

Ultrasonic bone densitometer
M-FS-20994 B72-10450 05

In vivo measurement of mechanical
impedance of bone
ARC-10857 B74-10245 05

Determination of bone mineral mass in
vivo
MSC-14276 B75-10168 05

BOOLEAN FUNCTIONS

The use of the chatter mode in
self-adaptive systems
HQ-10159 B70-10274 06

Techniques for improving reliability of
computers
M-FS-21326 B72-10109 02

Theory and calculus of cubical
complexes
NPO-11491 B73-10165 09

BOOMS (EQUIPMENT)

Position indicating, rotating boom
LANGLEY-11202 B72-10066 07

Self-deploying boom
GSFC-10566 B72-10574 07

BORATES

Simple chamber facilitates
chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05

BOREL SETS

Simple data-smoothing and
noise-suppression technique
M-FS-20803 B70-10627 06

BORESIGHTS

Eye point-of-regard system
ARC-10360 B71-10476 05

BORING MACHINES

Core drill's bit is replaceable without
withdrawal of drill stem - A concept
M-FS-20819 B70-10391 07

Universal inverted flexure
ARC-10345 B72-10122 07

BOROHYDRIDES

Preparation of highly fluorinated diols
containing ether linkages.
NPO-10768 B70-10353 04

BORON

Improved silicon solar cells
LEWIS-10964 B70-10029 01

Unidirectional composite stiffening
HQ-10266 B70-10054 04

Design and evaluation of three-phase
fibrous composite structures
HQ-10267 B70-10205 04

Technique for producing bipolar and
MOS field effect transistors on a single
chip
MSC-13358 B70-10218 01

Fabricating subscale components for
application to full-scale parts
M-FS-20805 B70-10390 07

New structural approach for determining
load carrying capability of filament wound
composite materials
M-FS-15121 B70-10408 06

Improvement of adhesive-bonded
structural joints
M-FS-20876 B70-10663 08

A concept for improving the dimensional
stability of filamentary composites in one
direction
LANGLEY-10443 B71-10061 04

New understanding of fiber composite
materials
NPO-11605 B71-10161 04

Promising born/graphite/resin
composites
M-FS-21126 B71-10217 04

Evaluation of omniweave reinforcement
for composite fabrication
M-FS-20946 B71-10245 04

High-strength large-diameter
carbon-base fibers
LEWIS-11167 B71-10403 04

Graphite-reinforced aluminum
composite
M-FS-21077 B71-10482 04

Structural design and stress analysis
program for advanced composite
filament-wound axisymmetric pressure
vessels (COMTANK)
NPO-11943 B72-10073 09

Oxygen-layer structure improves
lithium-doped silicon solar cells
NPO-11403 B72-10085 03

Introduction of lithium into the front
surface of solar cells
NPO-11404 B72-10086 02

Nondestructive-test standards for
evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04

Improved method for producing
metal-reinforced ceramics
AEC-10070 B72-10234 04

Graphite and boron-reinforced composite
materials data summary
M-FS-21691 B72-10294 04

Fabrication of uniaxial filament-reinforced
epoxy tubes for structural application
LANGLEY-10203 B72-10340 04

Boron aluminum composite structures
M-FS-21571 B72-10386 04

Large boron--epoxy filament-wound
pressure vessels
NPO-11900 B73-10038 08

Fatigue of boron-aluminum composites
bonds and joints
M-FS-22325 B73-10079 04

Boron--epoxy tubular structure
members
ARC-10737 B73-10265 08

Radiation hardening of metal-oxide
semi-conductor (MOS) devices by boron
GSFC-11425 B74-10026 01

BORON COMPOUNDS

Titanium reinforced boron polyimide
composite
M-FS-21916 B72-10353 04

Equations to assess the impact resistance
of fiber composites
LEWIS-11486 B72-10503 04

BORON NITRIDES

Growth of phase-pure, crack-free single
crystals and large-grained polycrystals of
molybdenum disilicide
HQ-10450 B70-10206 04

High temperature ion source
ERC-10197 B70-10379 03

Plasma conductivity gage
ARC-10147 B70-10510 03

Inexpensive high-temperature furnace for
thermocouple calibration
NUC-10372 B71-10046 03

Low cost uniform heat source
LEWIS-11903 B73-10011 02

Compact laser through improved heat
conductance
NPO-13147 B75-10176 03

BORON 10

Boron-10 loaded inorganic shielding
material
M-FS-22280 B72-10740 04

BOROSILICATE GLASS

Improved source of infrared radiation for
spectroscopy
M-FS-20613 B71-10031 03

Glass fiber addition strengthens
low-density ablative compositions
LANGLEY-11288 B74-10027 04

Low-temperature electrostatic
silicon-to-silicon seals using sputtered
borosilicate glass
LANGLEY-11589 B74-10263 08

BOUNDARIES

Method for constructing periodic orbits
in nonlinear dynamic systems
M-FS-14654 B71-10151 09

BOUNDARY LAYER CONTROL

Program for the transient response of ablating axisymmetric bodies including the effects of shape change
 LANGLEY-11049 B72-10068 09

BOUNDARY LAYER CONTROL

Integrated flight controller for light aircraft
 ARC-10456 B72-10213 06
 Pressure-probe assembly for wind tunnels
 ARC-10569 B72-10248 03

BOUNDARY LAYER FLOW

Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
 NPO-10895 B70-10132 09
 Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
 LEWIS-12178 B74-10129 09
 Laser velocimeter measurements of high-speed compressible flows
 ARC-10781 B75-10141 03

BOUNDARY LAYER SEPARATION

Dynamics of short pressure probes
 LEWIS-11293 B71-10374 09
 Prediction of stall characteristics of straight wing aircraft
 LANGLEY-11013 B71-10501 09
 Computer program for steamtube curvature analysis: Analytical method
 LANGLEY-11535 B74-10206 09

BOUNDARY LAYERS

Effect of wall roughness on liquid oscillations damping in rectangular tanks
 M-FS-20799 B70-10388 06
 Computing incompressible laminar and turbulent boundary layer formation
 LEWIS-11190 B71-10155 09
 Anemometer calibrator
 M-FS-21424 B71-10519 03
 Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
 LEWIS-11636 B72-10070 09
 Computer program for the attenuation of high bypass turbofan engine noise
 LEWIS-12179 B75-10242 09

BOUNDARY LUBRICATION

Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04

BOUNDARY VALUE PROBLEMS

Overlapped conic simulation of three-body trajectories
 MSC-13460 B70-10536 03
 Global search algorithm for optimal control
 ARC-10359 B70-10637 09

BOXES (CONTAINERS)

Foldable patterns form construction blocks
 MSC-13860 B71-10523 08

BRACKETS

Support for equipment - Quick mounting with quick release
 MSC-15874 B70-10542 07
 Electrical grounding bracket
 ARC-10041 B72-10045 01

BRAGG ANGLE

High-energy lasers by using distributed reflection: A concept
 NPO-13346 B75-10118 03

BRAIN

Post-operative cranial pressure monitoring system
 ERC-10336 B70-10436 05

Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 B70-10447 05

A thermocouple thermode for small animals
 ARC-10550 B72-10559 05

BRAKES (FOR ARRESTING MOTION)

Dry-frictional shock absorber
 NPO-11212 B70-10040 07
 Hydraulic brake safety valve
 M-FS-16444 B70-10207 07
 Three-dimensional pantograph for use in hazardous environments
 NUC-10222 B70-10567 07
 Remote coupling of air lines
 NUC-10225 B71-10101 07
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06

Sprag solenoid brake
 M-FS-21846 B72-10669 06
 Accelerometer-controlled automatic braking system
 LANGLEY-11383 B73-10419 06

Brake for rollable platform
 ARC-10512 B74-10045 06
 Antiskid braking system
 M-FS-22807 B74-10146 06

Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
 LANGLEY-11897 B75-10264 06

BRAKES (FORMING OR BENDING)

Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
 M-FS-14385 B70-10243 04

BRAKING

Four-way, full-throttling valve concept
 MSC-13437 B70-10165 07
 A new method for measuring slipperiness of airport runways and other paved surfaces
 LANGLEY-10795 B70-10712 06
 Optimized braking of landing vehicles with atmospheric drag
 NPO-11402 B72-10084 06
 Accelerometer-controlled automatic braking system
 LANGLEY-11383 B73-10419 06
 Variable-frequency inverter controls torque, speed, and braking in ac induction motors
 M-FS-22088 B73-10525 02

BRASSES

Miniature multicontact connectors
 LANGLEY-10740 B70-10724 01
 Hot tap thermowell installation
 MSC-12427 B71-10302 07
 Soldering iron temperature indicator
 NPO-11545 B72-10098 02

BRAYTON CYCLE

Compact electric heater
 LEWIS-11172 B70-10677 03

BRAZING

Testing of brazed and welded connections of stainless-steel tubing
 M-FS-20806 B70-10417 08
 High-temperature nickel-brazing alloy
 LEWIS-10928 B70-10537 08
 Repair of brazed steel honeycomb-sandwich panels with vertical pins only
 MSC-15831 B70-10624 08
 Thermocouple installation in thin-walled tubes
 LEWIS-11222 B70-10655 01

Low-cost high-temperature brazing material

LEWIS-11209 B70-10672 04
 Method of joining metals of significantly different expansion rates
 NPO-12076 B71-10028 08
 Ultrasonics used for high-precision nondestructive inspection of brazed joints
 NUC-10352 B71-10045 08
 Metal-to-ceramic seals - A literature survey
 NPO-11430 B71-10116 08

Induction brazing manual
 M-FS-14924 B71-10123 08

Ultrasonic scanning system for in-place inspection of brazed-tube joints
 M-FS-21166 B71-10227 06
 Improved brazing technique for pyrolytic graphite
 NPO-12026 B71-10293 08

Hermetically sealed motion transmitter
 MSC-17348 B71-10328 07

Cast segment evaluation
 M-FS-21354 B71-10363 08

Protective coating for salt-bath brazing
 LEWIS-90255 B71-10381 08

Exothermic brazing units
 M-FS-21435 B71-10467 08

Solid state welding of dispersion-strengthened nickel alloys
 LEWIS-11388 B71-10520 08

Copper/nickel eutectic brazing of titanium
 ARC-10337 B71-10525 08

High-temperature ceramic-to-ceramic seals
 ARC-10319 B72-10199 04

Nondestructive testing for braze voids in thin panels by use of special coatings
 LANGLEY-10486 B72-10374 08

The weld-brazing metal joining process
 LANGLEY-11072 B72-10683 08

Diffusion welding tool
 LEWIS-11807 B73-10072 08

Fatigue of boron-aluminum composites bonds and joints
 M-FS-22325 B73-10079 04

Braze alloys for high temperature service
 LEWIS-11374 B73-10205 06

Self-adjusting assembly jig
 LEWIS-12034 B73-10250 07

New concept in brazing metallic honeycomb panels
 LANGLEY-10957 B73-10358 08

In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
 MSC-14435 B74-10096 04

Binary alloys for refractory-metal brazing
 LEWIS-12184 B74-10125 08

Low-cost tool set for removing brazed fittings
 NPO-13495 B75-10054 07

BREADBOARD MODELS

Fuse-holder concept expedites electronic component changes
 M-FS-20615 B70-10191 01

One-shot multivibrator with complementary metal-oxide-semiconductor components
 MSC-13492 B70-10305 01

Complementary-MOS binary counter with parallel-set inputs
 ERC-10122 B70-10373 01

SUBJECT INDEX

BUCKLING

- A lightweight, high output soil sampler
NPO-10797 B71-10159 07
- Distribution and metering system for soil samples
ARC-10429 B71-10481 07
- BREAKDOWN**
- Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01
- BREATHING**
- Balanced-bellows spirometer
XAC-01547 B72-10279 05
- Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
- Breathing-metabolic simulator
HQ-10766 B72-10657 05
- Metabolic simulation chamber
HQ-10776 B72-10658 05
- Simulated breath waveform control
HQ-10779 B72-10661 05
- BREATHING APPARATUS**
- Regenerable metallic oxide systems for removal of carbon dioxide: A concept
ARC-10570 B72-10420 04
- Patient's breath controls comfort devices
LANGLEY-11138 B72-10533 05
- Breathing-metabolic simulator
HQ-10766 B72-10657 05
- Drive mechanism for production of simulated human breath
HQ-10777 B72-10659 05
- An efficient prebreathing apparatus for humans during decompression
MSC-14151 B72-10690 05
- Artificial atmosphere control system
M-FS-22159 B73-10089 05
- Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
- Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05
- Mobile automatic metabolic analyzer
M-FS-23143 B75-10077 05
- Oxygen cocoon for patients under intensive care
MSC-12663 B75-10079 05
- BRICKS**
- Flexible shielding system for radiation protection
LRL-10028 B72-10500 03
- BRIDGES (STRUCTURES)**
- A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06
- Accumulative weights program
M-FS-15066 B71-10181 09
- Portable lightweight bandsaw
M-FS-16927 B71-10237 07
- BRIGHTNESS**
- Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02
- BRIGHTNESS DISCRIMINATION**
- Luminescent screen composition and apparatus
ERC-10010 B70-10440 01
- BRITTLE MATERIALS**
- Simple, reproducible methods for thermal shock testing of brittle materials
NUC-11020 B72-10228 06
- Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06
- Energy absorbing system for mechanical impacts
NPO-10671 B72-10712 06
- Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
LEWIS-11490 B74-10124 04
- BRITTLENESS**
- A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
- Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
- Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
- Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
- Effect of size on cracking of materials
NPO-11602 B71-10158 04
- Failure in glass
AEC-10088 B72-10364 04
- High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 B74-10265 04
- BROADBAND**
- Inexpensive net solar flux radiometer
HQ-10087 B70-10296 03
- Nonequal iteration directional filters permit selective clearance of ripples in passband circuits
ERC-10313 B70-10385 01
- Improved modified turnstile antenna
MSC-12209 B70-10482 01
- Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
- Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02
- Projections of scan patterns on human retina
ARC-10181 B72-10193 05
- Improved intensifying screen reduces X-ray exposure
AEC-10090 B72-10232 03
- Wideband wattmeter for instant measurement of real power
LEWIS-11698 B72-10737 01
- Dual-band ridged waveguide
LANGLEY-11781 B75-10091 01
- New broadband square-law detector
NPO-13410 B75-10180 02
- BROADBAND AMPLIFIERS**
- Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
- Low phase-shift amplifier
NPO-11663 B72-10185 01
- Broadband RF-distribution amplifier
NPO-11401 B72-10245 01
- Peak-holding circuit for extremely narrow pulses
JSC-14129 B73-10317 02
- Reflected-wave maser
NPO-13490 B75-10279 03
- BROADCASTING**
- Improved modified turnstile antenna
MSC-12209 B70-10482 01
- BROMIDES**
- Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02
- BROMINE**
- Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 B70-10540 04
- Halogenation of microcapsule walls
ARC-10410 B72-10161 04
- Acid/alkali bromide secondary battery
NPO-13237 B75-10324 01
- BROMINE COMPOUNDS**
- Initiation of polymerization by tetrabutylammonium p-lithiophenoxide
ARC-10553 B72-10223 04
- BRONZES**
- Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
- BROTHS**
- Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
- BRUSHES**
- Commutating brushes tested in dc motors in dry argon atmospheres
ARG-10243 B70-10045 01
- Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01
- Design and evaluation of brushless electrical generators
LEWIS-10124 B70-10554 02
- BUBBLE CHAMBERS**
- Development of superconductive magnets
LEWIS-11170 B70-10678 03
- Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
- BUBBLES**
- Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
- Combination syringe provides air-free blood samples
MSC-12320 B70-10545 05
- Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03
- Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
- Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
- Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 B71-10236 03
- Expandable coating cocoon leak detection system
M-FS-21848 B72-10380 06
- Two-axis leveling detector system
M-FS-21344 B72-10392 02
- Phase-change materials handbook
M-FS-22064 B72-10464 04
- Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 B75-10195 01
- Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 B75-10196 01
- Bubble-domain circuit wafer evaluation coil set
LANGLEY-11728 B75-10197 01
- BUCKLING**
- Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06

BUDGETING

- New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
- Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
- Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
- Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08
- Isogrid structure
M-FS-21567 B72-10323 06
- Geometrically nonlinear static and dynamic analysis of arbitrarily loaded shells of revolution
LANGLEY-11109 B72-10504 09
- Computer program to compute buckling loads of simply supported anisotropic plates
LEWIS-11961 B73-10247 09
- Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
- Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09
- Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09
- ### BUDGETING
- MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
- Computer program for discounted cash flow/rate of return evaluations
M-FS-19040 B71-10377 09
- ### BUFFER STORAGE
- Buffer control unit for computer communications
ARC-10870 B75-10059 02
- ### BUFFERS (CHEMISTRY)
- Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05
- Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
- Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 B71-10356 04
- Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03
- ### BUFFETING
- Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
- Wind tunnel buffet load measuring technique
ARC-10495 B72-10022 06
- ### BUILDINGS
- A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06
- Flexible shielding system for radiation protection
LRL-10028 B72-10500 03
- Solar power roof shingle
LEWIS-12587 B75-10289 01

- Low-cost hot-air solar collector
M-FS-23272 B75-10301 08
- ### BULBS
- Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03
- Soldering iron temperature indicator
NPO-11545 B72-10098 02
- Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03
- ### BULKHEADS
- Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08
- ### BUMPERS
- Dry-frictional shock absorber
NPO-11212 B70-10040 07
- ### BUNDLES
- Scale factor gage for fiber optics inspection device
MSC-17361 B71-10496 07
- ### BUOYANCY
- Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
- Communications system for zero-g simulation tests in water
M-FS-21357 B71-10344 02
- ### BUOYS
- Simple and effective method to lock buoy position to ocean currents
M-FS-23140 B75-10095 06
- ### BURNING RATE
- Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
- Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03
- Suppressants for lowering propellant binder burning rate
ARC-10563 B72-10560 04
- ### BUS CONDUCTORS
- Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
- Concept for a distributed processor computer
ERC-10271 B70-10481 02
- Peak-power-point monitor for solar panel
NPO-11708 B72-10694 02
- Digital data command bus
NPO-11637 B73-10035 01
- ### BUSHINGS
- Low cost anti-galling bushings
LEWIS-11724 B72-10359 08
- ### BUTADIENE
- Polymerization of perfluorobutadiene
NPO-10863 B70-10131 04
- Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
- Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 B71-10291 04
- Improved elastomer for use with oxygen difluoride
ARC-10528 B72-10027 04
- ### BUTENES
- Precision control system for engine fuel
NPO-12017 B70-10244 07
- ### BUTT JOINTS
- Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08

- Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08
- Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
- Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08
- Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08
- ### BUTTERFLY VALVES
- Attitude controls for VTOL aircraft
XAC-8972 B71-10202 05
- ### BYPASSES
- Solid state switch provides high input-to-output isolation
HQ-10488 B70-10022 01
- Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
- Controlled current inductors
ERC-10139 B70-10494 01
- Plasma conductivity gage
ARC-10147 B70-10510 03
- RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
- Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01
- Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 B71-10069 01
- Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
- A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02
- High voltage protection network
ARC-10197 B72-10119 02
- Frequency switch keyed oscillator
ARC-10412 B72-10124 01

C

- ### C BAND
- Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
- Dual-band ridged waveguide
LANGLEY-11781 B75-10091 01
- ### CABIN ATMOSPHERES
- Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
- Leak test system
M-FS-21788 B72-10576 06
- Automation of Bosch reaction for CO₂ reduction
M-FS-21674 B72-10666 04
- Flammability study of materials in oxygen environments
M-FS-23306 B75-10310 04
- ### CABLES
- High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
- Improved shielding termination adapter for electrical cable connectors
MSC-15565 B70-10217 01

SUBJECT INDEX

Flat conductor cable connector with contact separation seal
M-FS-20757 B70-10387 01

Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01

Flat-conductor cable has rotary and linear flexibility
M-FS-21096 B71-10242 01

Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01

Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01

Slitting flat conductor cables with the single cutting edge slitter
M-FS-20111 B72-10575 07

CABLES (ROPES)

Stranded superconducting cable of improved design
ARG-90108 B70-10070 01

Easy manual operation of overhead garage doors - A concept
KSC-10555 B70-10543 07

Adjustable support spring
ARC-10203 B70-10636 07

A cable stabilizer for outdoor elevators
KSC-10513 B72-10283 07

A tool for measuring elevator cable tension
KSC-10708 B72-10509 07

Emergency-escape device
M-FS-22720 B73-10369 07

CADMIUM

Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08

Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 B71-10355 05

CADMIUM COMPOUNDS

Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04

Screening method improves performance of nickel-cadmium batteries
GSFC-11260 B71-10411 04

Electrodes for sealed secondary batteries
ARC-10238 B72-10050 02

CADMIUM SELENIDES

Piezoelectric transducer
HQ-10548 B70-10157 01

CADMIUM SULFIDES

Piezoelectric transducer
HQ-10548 B70-10157 01

Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02

Solid state variable time delay
ERC-10032 B70-10492 01

Improved cover for cadmium sulfide solar cells
LEWIS-11003 B70-10584 01

Improved fire-resistant coatings
GSFC-10072 B71-10198 04

Solar cell power scanner
LEWIS-11280 B71-10223 02

High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04

CALCIFICATION

Ultrasonic bone densitometer
M-FS-20994 B72-10450 05

CALCITE

Optical bonding agents for severe environments
ARC-10459 B72-10063 04

CALCIUM

Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01

Weight simulator
ARC-10100 B72-10046 05

CALCIUM CARBONATES

Less-expensive Rochon prisms
M-FS-20554 B70-10681 03

CALCIUM CHLORIDES

Growing single crystals in silica gel
ERC-10306 B70-10479 02

CALCIUM COMPOUNDS

High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08

Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03

CALCIUM FLUORIDES

High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02

Stable photosensor amplifiers
NPO-11561 B72-10100 01

Interferometric rotation sensor
ARC-10278 B72-10274 03

CALCIUM OXIDES

Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04

Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 B70-10432 04

Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 B71-10212 08

Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03

CALCIUM SILICATES

Improved fire-resistant coatings
GSFC-10072 B71-10198 04

CALCIUM TUNGSTATES

Improved intensifying screen reduces X-ray exposure
AEC-10090 B72-10232 03

CALCULATORS

Frequency-wavelength calculator with table of dielectric properties
GSFC-11200 B72-10472 03

Small portable speed calculator
M-FS-22638 B73-10329 07

CALCULUS

Elements of orbit-determination theory - Textbook
NPO-11466 B71-10425 03

Theory and calculus of cubical complexes
NPO-11491 B73-10165 09

CALIBRATING

A method for rapidly evaluating the linearity of calibration data
M-FS-14834 B70-10085 03

Precise audio-frequency markers for nuclear magnetic resonance spectra
NPO-11147 B70-10086 02

Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03

Testing device for verifying the performance of digital recorders
KSC-10300 B70-10149 01

CALIBRATING

Volumetric calibration of a propellant utilization system
M-FS-14943 B70-10156 06

Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03

Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03

Television camera as a scientific instrument
NPO-11164 B70-10209 03

Use of thermodynamic properties of metal-gas systems as low-pressure standards
LANGLEY-10452 B70-10223 03

Precision control system for engine fuel
NPO-12017 B70-10244 07

Noncontacting-optical-strain device
NPO-10778 B70-10292 03

Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 B70-10298 01

Simple, accurate temperature-measuring instrument
MSC-12327 B70-10303 01

Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03

Radiometric evaluation of antenna-feed component losses
NPO-11238 B70-10344 02

Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06

Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease
ERC-90066 B70-10376 01

Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04

Electronic flow simulator for eddy current probe calibration
NUC-10211 B70-10533 01

High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03

Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07

Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01

Low-noise flow valve for air ducts
MSC-13441 B70-10640 07

Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07

Resistivity and Hall measurements of thermoelectric materials
M-FS-20470 B71-10015 03

Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03

Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08

Multimode ergometer system
M-FS-21044 B71-10107 05

System accurately controls pressure in cryogenic tanks
LEWIS-11329 B71-10118 03

Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03

Electrical instrument measures position and velocity of shock waves
 ARC-10356 B71-10143 03
 Electronic ripple indicator
 KSC-10162 B71-10170 01
 Inexpensive, large-diameter, radar tracking and calibration spheres
 XLA-11154 B71-10190 01
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 B71-10298 02
 Calibration-interval adjustment indicator - A concept
 M-FS-18693 B71-10309 01
 Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
 LEWIS-11116 B71-10397 06
 Application of calibration masks to TV vidicon tube
 KSC-10589 B71-10404 02
 Scale factor gage for fiber optics inspection device
 MSC-17361 B71-10496 07
 Measuring internal dimensions of small transparent objects
 LANGLEY-10712 B71-10505 08
 Anemometer calibrator
 M-FS-21424 B71-10519 03
 Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03
 An improved aesthesiometer
 MSC-13609 B72-10032 05
 Low temperature scale for a 1 to 20 degree Kelvin region
 AEC-10007 B72-10146 03
 Laboratory leak tester provides high sensitivity
 AEC-10042 B72-10240 03
 Small turbining-type flowmeters for liquid hydrogen
 LEWIS-11535 B72-10331 06
 Computer program for fitting low-order polynomial splines by method of least squares
 LEWIS-11651 B72-10585 09
 Oscillating hot-wire anemometer
 NPO-11634 B72-10609 02
 Use of small turbine-type flowmeters to measure flow in large pipes
 LEWIS-11851 B72-10631 06
 Linear accelerator: A concept
 KSC-10618 B72-10636 06
 Portable beveling tool
 M-FS-16863 B72-10678 07
 Traveling digital counters for micrometers
 LANGLEY-11258 B73-10042 06
 Measurement of dimensions and alignment with optical instruments
 M-FS-22168 B73-10061 06
 Calibration of dissolved oxygen standard for analysis with methylene blue
 M-FS-22353 B73-10147 04
 Ultrasonic calibration device
 LANGLEY-11435 B73-10420 03
 Automatic PCM guard-band selector and calibrator
 KSC-10812 B73-10510 02
 Three-point bridge calibration with one resistor
 ARC-10762 B74-10047 01
 Compact source of soft X-rays
 HQ-10732 B74-10232 03
 Ultraviolet hydrogen-discharge lamp
 MSC-14793 B75-10272 03

CALIFORNIA

Wind trajectory tracing for air pollution studies (AIRPOL)
 NPO-11892 B72-10072 09

CALORIMETERS

High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01
 Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
 NUC-10227 B70-10356 03
 Saturn S-2 base environment for flight evaluation
 M-FS-16597 B70-10555 09
 Performance map of a heat pipe charged with ammonia
 NPO-11454 B70-10726 03
 Thermal conductivity of gaseous and liquid hydrogen
 NUC-10558 B71-10105 04
 Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03
 Method of determining thermal conductivity in multi-layer insulation systems
 M-FS-20213 B72-10154 03
 Superior cryogenic insulation developed
 M-FS-21560 B72-10187 04
 A heat flow calorimeter
 GSFC-11434 B73-10221 03
 Fluidic device for measuring constituent masses of a flowing binary gas mixture
 LEWIS-11995 B73-10230 06

CAMBER

Calculation of incompressible fluid flow through cambered blades
 M-FS-20503 B70-10093 06
 An investigation of tandem-row, high-head pump inducers
 M-FS-21139 B71-10152 07
 Computer program for calculating aerodynamic forces on blade sections
 LEWIS-11382 B71-10153 09

CAMERA SHUTTERS

Simple chamber facilitates chemiluminescent detection of bacteria
 LANGLEY-10705 B70-10525 05
 Multiple shutters for a stereoscopic camera
 MSC-13507 B71-10065 03
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Shutter design for stereoscopic camera
 MSC-13613 B71-10506 03
 Nematic liquid crystals for optical shutters: A concept
 NPO-11367 B72-10083 03
 Cine recording ophthalmoscope
 ARC-10399 B72-10189 05
 Hand-held photomicroscopy system
 ARC-10468 B72-10190 03
 A high-speed spectrograph shutter
 HQ-10635 B73-10368 01

CAMERAS

Electro-optical time marker for high-speed cameras
 KSC-10294 B70-10229 01
 The effect of object motion in Fraunhofer holography with application to velocity measurements
 MSC-12295 B70-10268 03
 Radiant heating concept efficient for light-transmitting windows
 M-FS-20630 B70-10324 03

Modified bubble level senses pitch and roll angles over wide range

MSC-13506 B71-10085 03
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
 M-FS-20546 B71-10439 02
 Modified camera records lens settings on film
 MSC-12363 B71-10494 03
 Shutter design for stereoscopic camera
 MSC-13613 B71-10506 03
 Time-lapse camera for microscopy
 ARC-10423 B72-10125 05
 Projections of scan patterns on human retina
 ARC-10181 B72-10193 05
 Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03
 Neutron radiographic viewing system
 M-FS-22024 B72-10468 02
 An automatic lightning detection and photographic system
 KSC-10728 B73-10043 02
 Automatic focus control for facsimile camera
 LANGLEY-11213 B73-10361 02
 Motion compensator for holographic motion picture camera
 M-FS-22517 B73-10434 03
 Photography of random motion with a holographic camera
 M-FS-22537 B73-10435 03
 Vertical copy camera system provides photographs from ERTS-1 imagery
 LEWIS-12140 B74-10009 07
 Viewgraph preparation made easier
 LANGLEY-11612 B74-10094 03
 Optical discriminator system
 LANGLEY-11580 B74-10139 03

CAMPBOR
 Low temperature ablation models made by pressure/vacuum application
 LANGLEY-10676 B70-10578 04

CAMS
 A long-lived precision switch actuator for controlling pump-piston action
 NPO-10757 B70-10279 07
 Thumb-actuated control device
 ARC-10019 B70-10407 01
 Long life, low cost ball valve, with lifted seals and cartridge type construction
 MSC-13430 B70-10653 07
 High-speed digital plotter
 ARG-90001 B71-10049 02
 Chatter-free check valve - A concept
 MSC-13262 B71-10067 07
 Sprue cutoff tool for molded FCC plugs
 M-FS-20236 B71-10421 08
 Rotary stripper for shielded and unshielded FCC
 M-FS-20119 B71-10465 08
 Programmed-pressure air supply for positive-pressure breathing system
 ARC-10845 B74-10075 05

CANCER
 A high yield neutron target
 LEWIS-12058 B74-10066 03
 Polyelectrolytes with high charge density
 NPO-11918 B74-10159 04

SUBJECT INDEX

CANOPIES

NASA-tricot - A lightweight radar reflective, knitted fabric
 LANGLEY-10776 B71-10342 04

CANS

Mounting, support, and isolation of various components of a hydrogen maser
 HQ-10563 B70-10032 02
 High-temperature "hydrostatic" extrusion
 NPO-10811 B70-10428 08
 Regenerable metallic oxide systems for removal of carbon dioxide: A concept
 ARC-10570 B72-10420 04
 Flexible shielding system for radiation protection
 LRL-10028 B72-10500 03

CANTILEVER BEAMS

Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01
 Bimorph piezoelectric device functions as flapper valve
 ERC-10082 B70-10382 01

CANTILEVER MEMBERS

Accumulative weights program
 M-FS-15066 B71-10181 09

CAPACITANCE

Active resistance capacitance filter design
 ARC-10020 B70-10034 01
 Waveform simulator synthesizes complex functions
 NPO-10251 B70-10128 02
 High energy density electrochemical cell
 LEWIS-10969 B70-10151 01
 A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01
 Shelf and cycle life evaluation of silver-zinc cells
 NPO-11258 B70-10214 01
 Formulas establish audio range inductance in beryllium coils
 M-FS-14244 B70-10281 02
 Ac-coupled ultrahigh input impedance amplifier
 LEWIS-11154 B70-10651 01
 RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
 GSFC-10983 B70-10664 02
 Composite metal-oxide device has voltage sensitive capacitance
 HQ-10594 B70-10687 01
 Miniature multicontact connectors
 LANGLEY-10740 B70-10724 01
 Ceramic wiring board increases packaging density of electronic modules
 MSC-13497 B71-10084 01
 Wein bridge oscillator circuit
 MSC-13686 B71-10089 01
 Multiloop distributed RC active networks
 ARC-10200 B71-10177 01
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Improved relay chatter detector
 NPO-10355 B71-10292 01
 Novel shift register eliminates logic gates and power switching circuits
 GSFC-10517 B71-10322 01
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01

Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor

GSFC-10835 B71-10375 08
 Voltage-tunable parallel-T filter for remote operation
 NPO-11165 B72-10077 01
 Simple dynamic electromagnetic radiation detector
 LEWIS-11159 B72-10227 03
 Improved capacitance multiplier circuit
 NPO-11948 B74-10162 02
 Trielectrode capacitive pressure transducer
 ARC-10711 B75-10025 01

CAPACITANCE SWITCHES

Frequency shifting with a solid-state switching capacitor
 HQ-10812 B73-10259 01

CAPACITIVE FUEL GAGES

Volumetric calibration of a propellant utilization system
 M-FS-14943 B70-10156 06

CAPACITORS

Active resistance capacitance filter design
 ARC-10020 B70-10034 01
 Thermodielectric radiometer
 ARC-10138 B70-10056 02
 Signal conditioner circuit for photomultiplier tube
 XLA-10773 B70-10096 01
 Butt welder for fine gage wire
 LANGLEY-10103 B70-10136 08
 Highly stable biased amplifier and stretcher system
 ARG-10354 B70-10142 01
 Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Fuse-holder concept expedites electronic component changes
 M-FS-20615 B70-10191 01
 Laser altimeter
 M-FS-13691 B70-10196 02
 Low power NAND gate
 M-FS-14487 B70-10203 01
 Ultrastable reference pulser for high-resolution spectrometers
 ARG-10364 B70-10216 01
 Improved antenna pattern recorder provides visual display of RF power
 M-FS-20447 B70-10230 09
 Visual device to assist computer program debugging
 MSC-15833 B70-10308 09
 Pentat circuit may be used in conversionless decimal counter
 HQ-10146 B70-10336 01
 A self-tuning filter
 ARC-10264 B70-10337 01
 Constant-amplitude RC oscillator
 ARC-10262 B70-10338 01
 Load cell for thermionic converter tests
 LEWIS-11068 B70-10470 01
 Synthesis of diamonds
 M-FS-20698 B70-10513 08
 Latching overcurrent circuit breaker
 NPO-11131 B70-10524 01
 Ac-coupled ultrahigh input impedance amplifier
 LEWIS-11154 B70-10651 01
 Small, efficient power supply for xenon lamps
 MSC-13637 B70-10684 01

CAPACITORS

Lamp modulator provides signal magnitude indication
 KSC-10565 B70-10700 01
 Voltage-controlled oscillator
 ARC-10078 B71-10171 01
 A 20 kHz power oscillator
 LEWIS-11319 B71-10174 01
 Inertia diaphragm pressure transducer
 XAC-2981 B71-10200 05
 Coarse roll-rate gain-control circuit
 ARC-10064 B71-10204 01
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 Oscillating tank circuit eliminates ballast resistor in lamp control circuit
 M-FS-20891 B71-10275 01
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01
 Double phase-lock loop with rapid transient response - A concept
 GSFC-10864 B71-10349 01
 A study of nitride devices for computer memory applications
 M-FS-20971 B71-10350 03
 Discrete-component S-band power amplifier
 GSFC-11248 B71-10365 01
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 RF-controlled implantable solid state switch
 ARC-10136 B71-10426 01
 Waveshaping electronic circuit
 M-FS-14916 B71-10429 01
 Radiographic inspection specifications for electronic components
 M-FS-20723 B71-10438 01
 Improved plasma accelerator
 ARC-10109 B71-10454 03
 High noise immunity one shot
 ARC-10137 B72-10047 01
 Improved device measures performance of batteries under load
 ARC-10252 B72-10051 02
 Voltage-tunable parallel-T filter for remote operation
 NPO-11165 B72-10077 01
 Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02
 Tornado detector and alarm
 M-FS-20915 B72-10106 01
 Frequency switch keyed oscillator
 ARC-10412 B72-10124 01
 Heart simulator
 M-FS-21609 B72-10131 02
 Vibrating ribbon bolometer: A concept
 XAC-10768 B72-10170 03
 Improved high-performance shock tube
 NPO-11885 B72-10242 03
 Control of oscillations in a discharge circuit
 ARC-10556 B72-10304 01
 A simple tachometer circuit
 ARC-10603 B72-10308 01
 Aluminum nitride insulating films for MOSFET devices
 NPO-11859 B72-10425 04
 Novel dielectric reduces corona breakdown in ac capacitors
 M-FS-21486 B72-10505 01

CAPILLARY FLOW

Electronic integrator for gyro rate output voltages
 NPO-11499 872-10555 01
 Compact 20-kiloampere pulse-forming-network capacitor bank
 LEWIS-12009 873-10171 01
 Complementary MOS four-phase logic circuits
 JSC-14240 873-10174 01
 Thin-film temperature sensor
 NPO-11775 874-10100 01
 Improved fabrication of electrolytic capacitors
 M-FS-23133 874-10294 01
 Response of tantalum capacitors to fast transient overvoltages
 MSC-14822 875-10274 01

CAPILLARY FLOW

High pressure flow-rate switch
 NPO-10722 870-10028 07
 Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 870-10106 03
 Prediction of gas leakage of environmental control systems
 HQ-10270 870-10201 05
 Radial heat flux transformer
 NPO-10828 871-10311 03
 Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 871-10509 09
 Closed-cycle power supply for fluidic control systems
 ARC-10480 872-10163 06
 Internal capillary insulation for cryogenic tanks
 LEWIS-11234 872-10626 06
 Liquid-cooled liner for helmets
 ARC-10534 874-10249 05

CAPILLARY TUBES

Fuse and switch functions combined within a single housing
 HQ-10497 870-10003 01
 Combining micro dry column chromatography and mass spectrometry
 NPO-11240 870-10231 03
 Economic method for measuring ultra-low flow rates of fluids
 NPO-12064 870-10531 04
 Controlled droplet spray generator
 LEWIS-11193 870-10652 07
 Restartable heat pipe
 ARC-10198 872-10188 03
 Microminiature gas chromatographic column
 ARC-10594 872-10306 04
 Stabilization of porous glass reverse-osmosis membranes
 ARC-10646 872-10309 04
 Nondestructive measurement of capillary tube internal diameter
 LANGLEY-11647 875-10156 02

CAPSULES

Ferrofluidic solenoid with axial and radial displacement
 NPO-11738 872-10241 06

CARBIDES

Rene 41 heat treatment electron microscopy
 M-FS-18633 870-10081 04
 Surface treatment for valve seats
 NPO-10779 870-10202 08
 Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
 M-FS-18790 870-10213 04

A lightweight, high output soil sampler
 NPO-10797 871-10159 07
 Improved insulating materials effective at extremely high temperatures
 NPO-12067 871-10289 04
 Granular two-phase insulation systems
 NPO-12068 871-10290 04
 Improved method for producing metal-reinforced ceramics
 AEC-10070 872-10234 04
 Carbide factor predicts rolling-element bearing fatigue life
 LEWIS-11940 873-10008 07

CARBOHYDRATES

Immobilized phosphorylase for synthesis of polysaccharides from glucose
 ARC-10680 872-10550 04

CARBON

Directionally solidified superalloy
 HQ-10522 870-10058 04
 Tensile creep-rate of pyrolytic carbon
 NPO-11254 870-10100 04
 Polyimide polymers provide improved ablative materials
 LEWIS-10861 870-10300 04
 Electron fractography used to examine nickel-base alloys
 M-FS-18649 870-10571 04
 Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
 LEWIS-11208 870-10628 03
 RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
 GSFC-10983 870-10664 02
 Improved insulating materials effective at extremely high temperatures
 NPO-12067 871-10289 04
 Improved brazing technique for pyrolytic graphite
 NPO-12026 871-10293 08
 Rapid method for sampling metals for materials identification
 MSC-17332 871-10320 04
 High-strength large-diameter carbon-base fibers
 LEWIS-11167 871-10403 04
 Isotropic pyrolytic carbons
 ARC-10532 872-10029 04
 High speed, self-acting, face-contact shaft seal has low leakage and very low wear
 LEWIS-11598 872-10114 07
 Trace contaminant adsorption and sorbent regeneration in closed ecological systems
 LANGLEY-10681 872-10328 04
 Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
 LEWIS-10800 872-10454 04
 Al/Ci2 molten salt battery
 HQ-10696 872-10527 01
 Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
 MSC-14247 872-10616 08
 Graphite ionization vacuum gauge
 LANGLEY-11338 874-10136 03

CARBON ARCS

Simple spectroscopy used with solid state image amplifier over wide spectral range
 M-FS-21345 871-10378 03

CARBON COMPOUNDS

Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
 LEWIS-11116 871-10397 06

CARBON DIOXIDE

Improved apparatus for continuous culture of hydrogen-fixing bacteria
 HQ-09000 870-10001 05
 Quantitative conversion of water to carbon dioxide
 NPO-10731 870-10013 04
 Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
 HQ-10389 870-10108 03
 Lightweight, self-evacuated insulation panels
 LEWIS-90361 870-10646 03
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 871-10079 04
 Polarographic carbon dioxide transducer amplifier
 MSC-13728 871-10090 02
 Scintillation detector for carbon-14
 ARC-10378 871-10144 03
 Polymer containing functional end groups is base for new polymers
 NPO-10998 871-10184 04
 Dynamic response of viscous compressible fluids in rigid tubes
 M-FS-20542 871-10269 03
 Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
 KSC-10518 871-10364 03
 Metabolic balance analysis program
 M-FS-21237 871-10384 09
 Reusable anaerobic system for microbiological studies - A concept
 MSC-13920 871-10495 05
 Space-suit carbon dioxide absorption system: A concept
 ARC-10546 872-10168 05
 Aircrew oxygen system
 ARC-10247 872-10195 05
 Simple gas chromatographic system for analysis of microbial respiratory gases
 ARC-10403 872-10207 03
 Oxygen reclamation with solid oxide electrolytes
 ARC-10487 872-10273 03
 Study of in-situ degradation of thermal control surfaces
 M-FS-20892 872-10336 04
 Helium leak measurements using CO2 as a carrier
 M-FS-21742 872-10354 03
 A continuous physiological data collector
 M-FS-20835 872-10402 05
 Solid amine compounds as sorbents for carbon dioxide: A concept
 ARC-10571 872-10421 04
 Dry ice plug for hydraulic and pneumatic pipe flushing
 MSC-12548 872-10496 06
 Carbon dioxide concentration indicator
 HQ-10582 872-10526 05
 Breathing-metabolic simulator
 HQ-10766 872-10657 05
 Metabolic simulation chamber
 HQ-10776 872-10658 05
 Automation of Bosch reaction for CO2 reduction
 M-FS-21674 872-10666 04
 Catalytic reactor with disposable cartridge
 ARC-10747 873-10376 04

SUBJECT INDEX

SUBJECT INDEX

Computer system for monitoring radiorepirometry data
ARC-10784 873-10494 05

CARBON DIOXIDE CONCENTRATION
Metabolic breath analyzer
M-FS-21415 871-10466 05
Miniature carbon dioxide sensor
MSC-13332 871-10536 03
Carbon dioxide concentrator
ARC-10245 872-10194 05
Aircrew oxygen system
ARC-10247 872-10195 05
Carbon dioxide concentration indicator
HQ-10582 872-10526 05

CARBON DIOXIDE LASERS
Laser wavelength selector and output coupler
ERC-10248 870-10507 02
Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 870-10641 02
Microwave biasing improves detector response in the infrared region
GSFC-11050 871-10313 01
Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 871-10335 03
Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 872-10440 03
Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 872-10491 04
Measurement of electron density and temperature in plasmas
ARC-10598 872-10563 03
Laser system detects air turbulence
M-FS-21244 873-10210 03
High-sensitivity receiver for CO2 laser communications
GSFC-11455 873-10223 02
True airspeed measured by airborne laser Doppler velocimeter
ARC-10763 873-10506 02

CARBON DIOXIDE REMOVAL
Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 870-10094 04
Design method for adsorption beds
HQ-10269 870-10294 04
Carbon dioxide concentrator
ARC-10245 872-10194 05
Regenerable metallic oxide systems for removal of carbon dioxide: A concept
ARC-10570 872-10420 04
Silver oxide sorbent for carbon dioxide
ARC-10797 874-10053 04

CARBON FIBERS
Specimen for high-temperature tensile tests
ARC-10531 872-10028 04
Fabrication of carbon film composites for high-strength structures
ARC-10613 872-10423 04
Preparation of prepreg graphite tape with insoluble polymer
JSC-14313 873-10084 04
Fabrication techniques for polybenzimidazole composites
ARC-10724 873-10269 04
Millimeter-wave antenna system
GSFC-10949 873-10333 01

CARBON MONOXIDE
Improved photoionization mass spectrometer
LANGLEY-10180 870-10402 04

Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 872-10137 04
Comparison of catalyst activity
ARC-10493 872-10201 04
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 872-10206 03
Oxygen reclamation with solid oxide electrolytes
ARC-10487 872-10273 03
Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
LEWIS-11512 872-10434 07
Carbon monoxide detector
M-FS-23090 874-10268 04

CARBON MONOXIDE POISONING
Estimating carbon monoxide exposure
MSC-17211 871-10319 04

CARBON STEELS
Practical method of diffusion-welding steel plate in air
LEWIS-11387 871-10455 08
Study of hot hardness characteristics of tool steels
LEWIS-11785 872-10583 04
Lightweight, high speed bearing balls: A concept
LEWIS-11087 874-10013 06

CARBON 14
Scintillation detector for carbon-14
ARC-10378 871-10144 03
Gas leak-detection system
NPO-11405 872-10087 03
Computer system for monitoring radiorepirometry data
ARC-10784 873-10494 05

CARBONATES
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 870-10104 04
Stress corrosion crack inhibiting method for titanium
NPO-10271 870-10129 03
Polymerization of perfluorobutadiene
NPO-10863 870-10131 04
Method for evaluating effectiveness of dry fire-extinguishing chemicals
ARC-10869 875-10027 04

CARBONIC ACID
Carbon dioxide concentration indicator
HQ-10582 872-10526 05

CARBONYL COMPOUNDS
Reductive cleavage of the peptide bond
LRL-10026 873-10194 04

CARBOXYHEMOGLOBIN
Estimating carbon monoxide exposure
MSC-17211 871-10319 04

CARBOXYL GROUP
Polymer containing functional end groups is base for new polymers
NPO-10998 871-10184 04

CARBOXYLIC ACIDS
A method of isolating organic compounds present in water
AEC-10010 872-10044 04

CARBURETORS
Swirl-can combustor segment
LEWIS-11082 870-10322 07

CARBURIZING
Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
HQ-10565 870-10035 01

CARRIER WAVES

CARDIOGRAPHY
Miniature implantable instrument measures and transmits heart function data
ARC-10201 871-10163 05
Improved format for radiocardiographic data
ARC-10742 873-10270 05

CARDIOLOGY
Vectorcardiogram
JSC-14427 873-10401 02
Cardiotachometer displays heart rate on a beat-to-beat basis
M-FS-20284 873-10477 05
Subminiature transducers for measuring forces and deformation of heart muscle
NPO-13423 875-10051 05
Electrocardiogram signal analyzer
MSC-12710 875-10269 05

CARDIOTACHOMETERS
Cardiotachometer displays heart rate on a beat-to-beat basis
M-FS-20284 873-10477 05

CARDIOVASCULAR SYSTEM
Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 871-10477 05
Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 872-10512 05
Catheter-tip force transducer for cardiovascular research
NPO-13643 875-10211 05

CARDS
Manpower forecast program
NPO-11551 871-10244 09
TCB operation supply inventory system /TCBSYS/
GSFC-11306 871-10314 09

CARGO
Two-directional active damper
LANGLEY-11815 875-10259 06

CARRIAGES
Vee-notch tool cuts specimens
M-FS-20730 870-10411 06
Filler-wire positioner for electron beam welding
MSC-15637 870-10604 08
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 870-10714 07
High-speed digital plotter
ARG-90001 871-10049 02
Spray momentum measuring system
MSC-12305 871-10137 05

CARRIER FREQUENCIES
Telemetry for impact acceleration measurements
ARC-10289 870-10079 01
Block-coded communications
NPO-11397 870-10242 02
Accurate measurement of telemetry performance
NPO-11457 872-10089 02

CARRIER INJECTION
Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 870-10181 01

CARRIER WAVES
Digital phase-modulation/multiplex system
NPO-11338 870-10355 02
Digital demodulation with data subcarrier tracking
NPO-10858 870-10518 02

CARRIERS

- Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
- CARRIERS**
Quick-donning backpack harness
LANGLEY-10102 B72-10641 05
- CARTESIAN COORDINATES**
Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08
Radiation diffraction calculation program /DIFF2/
GSFC-11422 B71-10462 09
- CARTRIDGES**
Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 B70-10653 07
A silver ion water sterilization system
MSC-15734 B71-10278 04
Reusable anaerobic system for microbiological studies - A concept
MSC-13920 B71-10495 05
Catalytic reactor with disposable cartridge
ARC-10747 B73-10376 04
- CASCADE CONTROL**
Multiloop distributed RC active networks
ARC-10200 B71-10177 01
Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03
- CASCADE FLOW**
Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
- CASCADES**
Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
- CASING**
Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
- CASSEGRAIN ANTENNAS**
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06
Low-noise microwave polarimeter
NPO-11512 B73-10134 02
High-gain antenna with singly-curved reflector
NPO-11361 B73-10291 02
Variable-beamwidth antennas
GSFC-11760 B74-10041 02
- CASTING**
Directionally solidified superalloy
HQ-10522 B70-10058 04

- Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
Composite casting demonstration
M-FS-21668 B72-10266 04
Refractory inserts used to form cooling passages in cast superalloy turbine vanes
LEWIS-11169 B73-10013 08
Method for casting polyethylene pipe
ARC-10706 B73-10032 08
Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04
Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04
Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07
- CASTINGS**
Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08
A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Cast segment evaluation
M-FS-21354 B71-10363 08
- CATALOGS (PUBLICATIONS)**
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06
Computer system for library access
GSFC-11952 B75-10292 09
- CATALYSTS**
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
Polymerization of perfluorobutadiene
NPO-10863 B70-10131 04
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 B71-10291 04
Comparison of catalyst activity
ARC-10493 B72-10201 04
Hydrogen eliminator
ARC-10408 B72-10208 03
Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
Initiation of polymerization by tetrabutylammonium p-lithophenoxide
ARC-10553 B72-10223 04

SUBJECT INDEX

- Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
Catalyst for sodium chlorate decomposition
ARC-10584 B72-10305 04
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04
Continuous catalytic decomposition of methane
ARC-10339 B73-10016 03
- CATALYTIC ACTIVITY**
Insolubilization process increases enzyme stability
ARC-10314 B71-10443 04
Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 B72-10127 03
Comparison of catalyst activity
ARC-10493 B72-10201 04
Catalytic reactor with disposable cartridge
ARC-10747 B73-10376 04
- CATEGORIES**
Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09
- CATHETERIZATION**
Heart catheter cable and connector
ARC-10406 B72-10200 05
Catheter-tip force transducer for cardiovascular research
NPO-13643 B75-10211 05
- CATHODE RAY TUBES**
Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
Noncontacting-optical-strain device
NPO-10778 B70-10292 03
Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03
Luminescent screen composition and apparatus
ERC-10010 B70-10440 01
Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 B70-10447 05
Multilayer screen gives cathode ray tube high contrast
ERC-10217 B70-10454 01
Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02
Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 B70-10515 01
Man-machine interactive system simplifies computer-aided circuit design
LANGLEY-10711 B70-10660 09
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
Solar cell power scanner
LEWIS-11280 B71-10223 02

SUBJECT INDEX

Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Aircraft communication via telefacsimile system
 M-FS-20839 B72-10139 02
 Projections of scan patterns on human retina
 ARC-10181 B72-10193 05
 Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03
 A visual-display and storage device
 GSFC-10901 B72-10647 02
 Propellant feed systems transients
 MSC-17848 B72-10677 06
 Graphics shadowing analysis
 M-FS-21406 B74-10040 09

CATHODES

High energy density electrochemical cell
 LEWIS-10969 B70-10151 01
 Vapor feeding of liquid metal cathodes
 HQ-10213 B70-10168 03
 Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
 HQ-10379 B70-10246 02
 Electrodeposited inorganic separators for alkaline batteries
 GSFC-10943 B70-10462 01
 Solid state remote circuit selector switch
 LEWIS-10387 B70-10579 01
 An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 B70-10611 03
 Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03
 Advances in electrometer vacuum tube design
 GSFC-10729 B70-10696 01
 Miniature fuel cells relieve gas pressure in sealed batteries
 XGS-11370 B71-10064 02
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08
 Multichannel intercom with simultaneous send/receive capability
 M-FS-18808 B71-10228 02
 Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03
 Rapid method for sampling metals for materials identification
 MSC-17332 B71-10320 04
 Improved electron emitter
 LEWIS-10814 B71-10388 03
 Improved plasma accelerator
 ARC-10109 B71-10454 03
 Laser device provides accurate reference to true gravitational vertical
 ARC-10444 B71-10479 07
 Pulsed high-power arc heater with improved cathode and triggering mechanism
 ARC-10173 B72-10048 03
 Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02
 High-temperature, long-life thyratron
 LEWIS-11327 B72-10134 01

Silver-chlorine fuel cell: A concept
 ARC-10491 B72-10221 03
 Improved high-performance shock tube
 NPO-11885 B72-10242 03
 Ion plating seals microcracks or porous metal components
 LEWIS-11657 B72-10397 04
 Al/Cl₂ molten salt battery
 HQ-10696 B72-10527 01
 High-intensity source of extreme ultraviolet
 HQ-10754 B72-10528 03
 Cathode for use with low density gases
 HQ-10687 B72-10530 01
 Prevention of cathode damage from positive ion bombardment
 HQ-10688 B72-10654 03
 Casting copper to tungsten for high-power arc lamp cathodes
 LEWIS-12169 B74-10011 04
 Self-protected electrodes limit field-emission current
 ERC-10015 B74-10253 01

CATIONS

Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Suppression of zinc dendrites in zinc electrode power cells
 HQ-10550 B70-10434 02
 A silver ion water sterilization system
 MSC-15734 B71-10278 04
 Covalent bonding of polycations to small polymeric particles
 NPO-13487 B75-10327 04

CAVITATION FLOW

Calculation of incompressible fluid flow through cambered blades
 M-FS-20503 B70-10093 06
 Elimination of gases and contamination from water
 KSC-10502 B70-10456 05
 Economic method for measuring ultra-low flow rates of fluids
 NPO-12064 B70-10531 04
 Ultrasonic metal etching for metallographic analysis
 LEWIS-11230 B71-10099 04
 An investigation of tandem-row, high-head pump inducers
 M-FS-21139 B71-10152 07
 Erosion of metals by multiple impacts with water
 HQ-10591 B71-10197 04
 A low-altitude satellite interaction study
 GSFC-11384 B71-10499 09
 Cavitating Venturi sump
 ARC-10504 B72-10012 06
 Cavitation data for hydraulic equipment
 LEWIS-11642 B72-10384 07
 Computer programs for the design of liquid-to-liquid jet pumps
 LEWIS-11679 B72-10584 09
 Process to restore obliterated serial numbers on metal surfaces
 LEWIS-12085 B74-10020 07

CAVITIES

An improvement in blackbody cavity design
 LANGLEY-10292 B70-10711 03
 Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03
 Optical inspection tool for interior surfaces of fluid lines
 M-FS-15162 B71-10513 06

CDC 3600 COMPUTER

Universal inverted flexure
 ARC-10345 B72-10122 07
 Survey of information concerning large diameter deep hole drilling
 AEC-10051 B72-10238 08
 Water cavity degasser for electrolysis cells
 ARC-10244 B72-10246 03
 A sensitive image intensifier which uses inert gas
 LRL-10024 B72-10312 03
 Prevention of cathode damage from positive ion bombardment
 HQ-10688 B72-10654 03
 A bi-stable optical device
 HQ-10701 B72-10655 03
 SRC seal testing
 M-FS-22426 B73-10199 01

CAVITY RESONATORS

Resonance tube igniter
 LEWIS-11219 B70-10618 04
 Acousto-optic filter for electronic laser tuning
 HQ-10715 B72-10520 03
 Mechanically and thermally stable maser cavity resonator
 HQ-10790 B72-10523 01
 Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
 HQ-10844 B75-10087 03
 Signal mixer for optical heterodyne receiver
 M-FS-23251 B75-10307 03

CDC COMPUTERS

Metabolic balance analysis program
 M-FS-21237 B71-10384 09
 Optical design and analysis program
 GSFC-11393 B71-10456 09
 FORTRAN read package
 MSC-14161 B72-10750 09
 Computer program for stress, vibration, and buckling characteristics of general shells of revolution
 LANGLEY-11369 B73-10363 09
 Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
 LANGLEY-11199 B74-10203 09
 Computer program for calculating thermodynamic and transport properties of fluids
 LEWIS-12520 B75-10188 09
 Automated statistical analysis program (ASAP)
 LANGLEY-11125 B75-10217 02

CDC 1604 COMPUTER

Aerotherm charring materials ablation computer program
 LEWIS-11854 B73-10065 09

CDC 3100 COMPUTER

Ray tracing program with options for diffraction gratings
 GSFC-11305 B71-10294 09

CDC 3200 COMPUTER

Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
 General optics evaluation program (GENOPTICS)
 GSFC-12038 B75-10294 09

CDC 3600 COMPUTER

Computer program for calculating water and steam properties
 LEWIS-12206 B74-10123 09

CDC 6000 SERIES COMPUTERS

SUBJECT INDEX

CDC 6000 SERIES COMPUTERS

Fast Mars communication geometry program
 LANGLEY-10658 B71-10002 09
 NASTRAN computer system level 12.1
 GSFC-10991 B71-10285 09
 Spin vector control of a spinning space station
 M-FS-21333 B71-10296 09
 Vibrational transfer functions for base excited systems
 M-FS-21432 B71-10441 09
 Program for the transient response of ablating axisymmetric bodies including the effects of shape change
 LANGLEY-11049 B72-10068 09
 Mislift and miss-drag programs
 LANGLEY-10932 B72-10153 09
 Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds
 LANGLEY-11250 B73-10183 06
 Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds
 LANGLEY-11249 B73-10184 06
 Characteristics of FORTRAN
 LANGLEY-11177 B73-10322 09
 Dynamic nonlinear analysis of shells of revolution (DYNASOR II)
 JSC-14496 B73-10443 09
 Frequencies and modes for shells of revolution (FAMSOR)
 JSC-14497 B73-10444 09
 The static nonlinear analysis of shells of revolution (SNASOR II)
 JSC-14495 B73-10445 09
 Stiffness and mass matrices for shells of revolution (SAMSOR II)
 JSC-14494 B73-10446 09
 Improved method for design of expansion-chamber mufflers with application to operational helicopter
 LANGLEY-11548 B73-10471 03
 Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
 LANGLEY-11175 B74-10091 06
 Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
 LANGLEY-11569 B74-10186 09
 Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
 LANGLEY-11533 B74-10204 09
 Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
 LANGLEY-11209 B74-10205 09
 Computer program for steamtube curvature analysis: Analytical method
 LANGLEY-11535 B74-10206 09
 Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
 LANGLEY-11581 B74-10207 09
 Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
 LANGLEY-11596 B74-10236 09
 Executive computer program for linking independent computer programs: ODINEX
 LANGLEY-11324 B75-10194 09

Chemical equilibrium of ablation materials including condensed species
 LANGLEY-11801 B75-10225 04
 Computer integration of hydrodynamics equations for heat pipes
 GSFC-12009 B75-10252 09
 Static aeroelastic program
 LANGLEY-11602 B75-10298 06
 The Langley Research Center
 NASA/PERT TIME III
 LANGLEY-11887 B75-10302 09

CDC 6400 COMPUTER

Synthesis of dynamic systems
 M-FS-21490 B71-10491 09
 Vibration characteristics of ring-stiffened orthotropic shells of revolution
 LANGLEY-10989 B71-10535 09
 Variable boundary II heat conduction
 LEWIS-10679 B72-10444 09
 N-body U and K matrix program
 LEWIS-11438 B73-10012 09
 A linear circuit analysis program with stiff systems capability
 LANGLEY-11184 B73-10091 09
 Computer program for the prediction of reorientation flow dynamics
 LEWIS-11816 B73-10307 09

CDC 6600 COMPUTER

Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
 NPO-10895 B70-10132 09
 Data from various sources provide standard single-level resonance parameters for uranium 233
 NUC-10229 B70-10357 03
 Computer program for predicting creep behavior of bodies of revolution
 NUC-11104 B71-10037 09
 FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
 NUC-10242 B71-10038 09
 AUTOTEM - Automated geometry meshing and heat conduction calculation
 NUC-10241 B71-10039 09
 Monte Carlo program for the transport of neutrons and gamma rays
 LEWIS-11403 B71-10490 09
 Prediction of stall characteristics of straight wing aircraft
 LANGLEY-11013 B71-10501 09
 Vibration characteristics of ring-stiffened orthotropic shells of revolution
 LANGLEY-10989 B71-10535 09
 Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
 LANGLEY-11048 B72-10067 09
 Rapid analysis of electric propulsion missions
 ARC-10430 B72-10299 09
 Propulsion sizing program
 MSC-14016 B72-10605 09
 Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
 LANGLEY-11068 B72-10749 06
 Medical Information Management System (MIMS): An automated hospital information system
 GSFC-11540 B73-10073 09
 Computer program to determine pressure distributions and forces on blunt bodies of revolution
 LANGLEY-11197 B73-10362 09

Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow
 LANGLEY-11305 B73-10470 06
 Computer program for calculating water and steam properties
 LEWIS-12206 B74-10123 09

CDC 8090 COMPUTER

Reliability Analysis Model
 M-FS-14513 B70-10614 09

CELESTIAL MECHANICS

Overlapped conic simulation of three-body trajectories
 MSC-13460 B70-10536 03
 Planet geometric center tracker
 ARC-10084 B71-10445 02
 Gravitational gradiometer measures mass changes
 M-FS-20814 B72-10140 03

CELL CATHODES

Cell for electrolysis of water vapor
 ARC-10521 B72-10166 03

CELLS (BIOLOGY)

Improved apparatus for continuous culture of hydrogen-fixing bacteria
 HQ-09000 B70-10001 05
 Analytical methods for bacterial kinetics studies
 LRL-10011 B71-10192 05
 Time-lapse camera for microscopy
 ARC-10423 B72-10125 05
 A reusable prepositioned ATP reaction chamber
 HQ-10660 B72-10525 05
 Automatic agar tray inoculation device
 LANGLEY-11074 B72-10637 05
 A process yields large quantities of pure ribosome subunits
 HQ-10662 B72-10653 05
 Reproductive cell separation: A concept
 M-FS-22627 B73-10198 05
 Ionene treatment of surfaces stimulates cell growth
 NPO-13421 B75-10121 04

CELLULOSE

Elimination of gases and contamination from water
 KSC-10502 B70-10456 05
 New type of nonflammable paper
 MSC-13432 B70-10546 04
 The deterioration of intermediate moisture foods
 MSC-13827 B71-10332 05
 Insolubilization process increases enzyme stability
 ARC-10314 B71-10443 04
 Water purification by reverse osmosis using heterocyclic polymer membranes
 LANGLEY-10514 B72-10230 04
 Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04
 An efficient, simple dialyzer
 HQ-10741 B72-10522 05
 Fire retardant cellulosic foam
 JSC-14336 B73-10085 04

CELLULOSE NITRATE

Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04
 Collodion technique of mirror cleaning
 LANGLEY-10675 B70-10463 04

CEMENTATION

Improved heat-resistant garments
 MSC-12109 B70-10544 08
 A protective coating for stainless steel
 LEWIS-11267 B72-10256 04

CEMENTS

- Motor brush wear measured with strain gages
 GSFC-10886 B70-10266 01
 Self-forming shim or gasket for mounting heavy equipment
 KSC-10504 B70-10289 07
 An explosion-proof battery case
 MSC-12335 B70-10304 01
 Improved protection for silicon solar cells
 LEWIS-11065 B70-10706 08
 Optical bonding agents for severe environments
 ARC-10459 B72-10063 04

CENSORED DATA (MATHEMATICS)

- Statistical analysis tables for truncated or censored samples
 M-FS-21024 B71-10351 03
 Table for estimating parameters of Weibull distribution
 M-FS-18817 B71-10436 03

CENTAUR LAUNCH VEHICLE

- Main tank injection pressurization program
 LEWIS-11368 B72-10069 09

CENTER OF GRAVITY

- Calculation of the inertia tensor and center of gravity of complex bodies
 NPO-10827 B70-10158 09
 Accumulative weights program
 M-FS-15066 B71-10181 09
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Landing dynamics program for impact attenuating vehicles /LANDIT/
 NPO-10840 B71-10472 09

CENTRAL NERVOUS SYSTEM

- A thermocouple thermode for small animals
 ARC-10550 B72-10559 05

CENTRAL PROCESSING UNITS

- Modular digital computer system design
 M-FS-22935 B74-10034 09

CENTRIFUGAL COMPRESSORS

- Continuous-flow variable-density wind tunnel facilities
 NPO-11287 B72-10078 06
 Program for calculating total-efficiency of specific-speed characteristics of centrifugal compressors
 LEWIS-12008 B73-10309 09
 Computer program for predicting off-design performance of centrifugal compressors
 LEWIS-12186 B74-10067 09

CENTRIFUGAL FORCE

- Fabrication of hollow ball bearings by diffusion welding
 LEWIS-11026 B70-10331 08
 Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
 LEWIS-10856 B70-10468 07
 Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
 LEWIS-11152 B71-10173 07
 Cine recording ophthalmoscope
 ARC-10399 B72-10189 05

CENTRIFUGAL PUMPS

- Method of calculating blade-to-blade plane flow in centrifugal pump
 M-FS-18087 B70-10124 06

- A concept for improving efficiency of multistage centrifugal pumps
 LEWIS-10966 B70-10287 07
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 A method for calculating the effects of design errors and measurement errors on pump performance
 LEWIS-11503 B72-10292 07
 Design criteria monograph on centrifugal flow turbopumps
 LEWIS-12346 B74-10228 06

CENTRIFUGES

- Improved method for reclaiming vacuum diffusion pump oil
 LEWIS-11647 B72-10511 04
 Electrophoresis separator combining centrifugal separation
 M-FS-21396 B73-10328 04

CENTRIFUGING

- Separation of gas mixtures by centrifugation
 ARC-10449 B72-10270 03
 Two-phase, passive separator-and-filter assembly
 LANGLEY-10976 B74-10133 04

CERAMIC BONDING

- Inorganic bonding of semiconductor strain gages
 GSFC-10833 B70-10215 08
 Simple bonding technique for high-temperature ceramic coatings
 LEWIS-11085 B70-10580 08
 A piezoelectrically actuated ball valve
 ARC-10338 B72-10204 06

CERAMIC COATINGS

- Self-replaceable thermocouple for molten steel bath - A concept
 NUC-10223 B71-10125 01
 Protective coating for salt-bath brazing
 LEWIS-90255 B71-10381 08
 Survey of coatings for solar collectors
 LEWIS-12510 B75-10067 04

CERAMICS

- Biaxial prestressing of brittle materials
 M-FS-20272 B70-10316 04
 Bimorph piezoelectric device functions as flapper valve
 ERC-10082 B70-10382 01
 Hydrodynamic squeeze-film bearings for gyroscopes
 M-FS-20802 B70-10389 07
 High-temperature "hydrostatic" extrusion
 NPO-10811 B70-10428 08
 Advances in electrometer vacuum tube design
 GSFC-10729 B70-10696 01
 Strain gage installation manual
 M-FS-18822 B70-10715 06
 Improved wax mold technique forms complex passages in solid structures
 XLA-07829 B71-10063 05
 Ceramic wiring board increases packaging density of electronic modules
 MSC-13497 B71-10084 01
 Methyl alcohol used as penetrant inspection medium for porous materials
 NUC-10419 B71-10103 06
 Metal-to-ceramic seals - A literature survey
 NPO-11430 B71-10116 08
 Ceramic backup ring prevents undesirable weld-metal buildup
 NUC-10357 B71-10117 08

- Improved transducer for squeeze-film bearings
 M-FS-20826 B71-10140 07
 Unique intermetallic compounds prepared by shock wave synthesis
 M-FS-20861 B71-10216 04
 Granular two-phase insulation systems
 NPO-12068 B71-10290 04
 Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 B71-10303 04
 Improved electron emitter
 LEWIS-10814 B71-10388 03
 Practical method of diffusion-welding steel plate in air
 LEWIS-11387 B71-10455 08
 High-temperature ceramic-to-ceramic seals
 ARC-10319 B72-10199 04
 Fabrication of large ceramic electrolyte disks
 ARC-10320 B72-10202 03
 A piezoelectrically actuated ball valve
 ARC-10338 B72-10204 06
 Improved method for producing metal-reinforced ceramics
 AEC-10070 B72-10234 04
 Inorganic glass ceramic slip rings
 M-FS-20711 B72-10313 04
 Plasma calcining of pigment particles for thermal control coatings
 M-FS-21267 B72-10320 04
 Ultrasonic bone densitometer
 M-FS-20994 B72-10450 05
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04
 Floating zone process for drawing small diameter fibers of refractory materials
 LEWIS-11380 B72-10491 04
 Mechanically and thermally stable maser cavity resonator
 HQ-10790 B72-10523 01
 High strength high modulus ceramic fiber
 M-FS-21266 B72-10592 04
 Improved mold release for filled-silicone compounds
 JSC-19300 B73-10338 04
 New standoffs provide high-reliability component mounting for printed wiring boards
 LANGLEY-11176 B73-10512 01
 Process for fabrication of stabilized aluminum phosphate fibers
 LANGLEY-11526 B74-10185 08
 High-temperature tensile tester for ceramics
 ARC-10822 B74-10244 04
 Silicon nitride used as a rolling-element bearing material
 LEWIS-12447 B75-10134 06
 Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
 LEWIS-12554 B75-10290 04
 Repair of damaged insulation tiles
 MSC-19549 B75-10321 04
 Fast semiautomatic dimensional test set and data logger
 MSC-19554 B75-10322 07

CERIUM OXIDES

- Readily fiberizable glasses having a high modulus of elasticity
 HQ-10593 B70-10432 04

CERMETS

CERMETS

Metal-to-ceramic seals - A literature survey

NPO-11430 B71-10116 08

Unique intermetallic compounds prepared by shock wave synthesis

M-FS-20861 B71-10216 04

Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor

GSFC-10835 B71-10375 08

CERTIFICATION

Qualifications and certification of nondestructive testing personnel

M-FS-20850 B71-10271 06

CESIUM

Glass technology involved in the manufacture of magnetometer components

GSFC-11283 B72-10132 03

CESIUM DIODES

Thermionic triode generates ac power

ERC-10284 B70-10499 01

CESIUM FLUORIDES

High temperature rare earth solid lubricants

LEWIS-10983 B70-10175 04

CESIUM IODIDES

High efficiency optical beamsplitter designed for operation in the infrared region

GSFC-10721 B70-10211 02

Scintillation detector for carbon-14

ARC-10378 B71-10144 03

CESIUM ION

Device for measuring electric fields

ARC-10164 B72-10148 03

CESIUM OXIDES

Optimum doping achieves high quantum yields in GaAs photoemitters

M-FS-20962 B71-10357 03

Advanced infrared photomultiplier

M-FS-20941 B72-10152 03

CESIUM VAPOR

Condensation of wet vapors in turbines

NPO-10773 B70-10613 09

CESIUM 137

Fast response densitometer for measuring liquid density

M-FS-14478 B72-10664 02

CHANNEL CAPACITY

Radio frequency baseband recording technique

HQ-10317 B70-10069 02

Low-noise K(u)-band receiver input system

NPO-13645 B75-10281 02

Power spectrum analysis of staggered quadriphase-shift-keyed signals

MSC-14865 B75-10318 09

CHANNEL FLOW

FORTAN program for generating a two-dimensional orthogonal mesh between two arbitrary boundaries

LEWIS-11863 B72-10753 09

CHANNELS (DATA TRANSMISSION)

High-speed digital plotter

ARG-90001 B71-10049 02

Multichannel intercom with simultaneous send/receive capability

M-FS-18808 B71-10228 02

Multiplexing technique for computer communications via satellite channels

ARC-10879 B75-10133 09

CHAPMAN-ENSKOG THEORY

Simple method for predicting viscosity of gas mixtures

LEWIS-11060 B70-10361 04

CHARACTER RECOGNITION

Image formation in microwave

holography

ARC-10773 B73-10378 03

CHARCOAL

Estimating carbon monoxide exposure

MSC-17211 B71-10319 04

Dynamic technique for measuring adsorption in a gas chromatograph

JSC-14083 B73-10339 04

Estimating sorber capacity for multiple contaminants

LANGLEY-11056 B73-10424 04

CHARGE DISTRIBUTION

Electrodynamic induction flowmeter

HQ-10230 B70-10024 01

CHARGED PARTICLES

Improved charged-particle analyzer - A concept

XAC-05506 B71-10283 03

Mass separator for low velocity ions

ARC-10375 B72-10123 03

Particle impact location detector

GSFC-11829 B74-10230 03

Improved channel multiplier for radiation-and-particle detectors

NPO-12128 B74-10275 03

Study of fluid flow by charged particles

ARC-10925 B75-10028 03

Covalent bonding of polycations to small polymeric particles

NPO-13487 B75-10327 04

CHARPY IMPACT TEST

Mechanical properties of Rene-41 affected by rate of cooling after solution annealing

M-FS-18790 B70-10213 04

CHARRING

Polyimide polymers provide improved ablative materials

LEWIS-10861 B70-10300 04

Polyimide polymers provide higher char yield for graphitic structures

LEWIS-10860 B70-10330 04

CHARTS

System automatically tunes hydrogen masers

HQ-10502 B70-10616 02

Improved method for calculating pump thermodynamic suppression head

M-FS-20852 B71-10239 07

Compressed gas handbook

KSC-10662 B71-10272 03

Pictorial display of materials and processes aids in fabricating complex assemblies

M-FS-24006 B71-10341 01

Psychrometric chart for physiological research

ARC-10394 B71-10470 03

CHEBYSHEV APPROXIMATION

Chebyshev minimax control theory

M-FS-20639 B70-10315 03

CHECKOUT

Automated validation of a computer operating system

M-FS-14510 B70-10257 09

Visual device to assist computer program debugging

MSC-15833 B70-10308 09

Fault detection monitor circuit provides "self-heal capability" in electronic modules

- A concept

KSC-10394 B70-10515 01

Radiation view factor program

M-FS-21075 B71-10106 09

FORTAN 4 digital program changer

MSC-17567 B71-10448 09

Software control for large scale on-board checkout: A concept

MSC-13977 B72-10015 09

Systems effectiveness evaluation program

HQ-10306 B72-10458 09

Fortran Automatic Code Evaluation System (FACES)

M-FS-22910 B74-10190 09

CHELATES

The deterioration of intermediate moisture foods

MSC-13827 B71-10332 05

Semi-organic structural adhesive for aluminum

M-FS-21328 B73-10071 04

CHEMICAL ANALYSIS

Quantitative conversion of water to carbon dioxide

NPO-10731 B70-10013 04

Determination of hydroxyl content in impure magnesium oxide

NPO-10774 B70-10017 04

Colorimetric detection of ethylene glycol vapor

MSC-13222 B70-10031 03

Compact apparatus for photogeneration of hydrated electrons

ARG-10487 B70-10036 03

Combining micro dry column chromatography and mass spectrometry

NPO-11240 B70-10231 03

Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride

ARG-10412 B70-10233 04

A long-lived precision switch actuator for controlling pump-piston action

NPO-10757 B70-10279 07

Interferometer for measurement of optical polarization

NPO-11239 B70-10405 03

Simple chamber facilitates chemiluminescent detection of bacteria

LANGLEY-10705 B70-10525 05

Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing

M-FS-18844 B70-10645 04

Automatic amino acid analyzer

ARC-10215 B71-10165 04

Direct analysis of hydrogen/deuterium mixtures: A concept

NPO-11322 B72-10244 03

Oxygen carrier for gas chromatographic analysis of inert gases in propellants

ARC-10574 B72-10249 04

Phosphorus in land-water systems

AEC-10049 B72-10429 05

An improved gas extraction furnace

MSC-14138 B72-10544 04

Immobilized phosphorylase for synthesis of polysaccharides from glucose

ARC-10680 B72-10550 04

Laser mass spectrometer

ARC-10687 B72-10571 03

Liquid sample processor

NPO-13136 B74-10278 05

SUBJECT INDEX

Automated data acquisition and reduction system for torsional braid analyzer
 LANGLEY-11578 B75-10073 02
 Infrared tunable laser: A concept
 ARC-10463 B75-10081 03

CHEMICAL ATTACK

Improved zinc oxide thermal control coatings
 NPO-11139 B72-10711 04

CHEMICAL BONDS

Polymerization of perfluorobutadiene
 NPO-10863 B70-10131 04
 Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
 NPO-10893 B70-10334 04
 An improved apochromatic wedge utilizing optical molecular contact bonding
 GSFC-11082 B72-10388 03
 Reductive cleavage of the peptide bond
 LRL-10026 B73-10194 04

CHEMICAL CLEANING

Colloid technique of mirror cleaning
 LANGLEY-10675 B70-10463 04
 Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07
 In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
 MSC-14435 B74-10096 04

CHEMICAL COMPOSITION

Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04
 High-strength magnetic materials
 LEWIS-10697 B70-10596 03
 Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
 M-FS-21113 B72-10321 04
 Synthesis of temperature and solvent-resistant polymers
 M-FS-20848 B72-10342 04
 Thermally resistant polymers for fuel tank sealants
 M-FS-21232 B72-10358 04
 Polymeric binder for explosives
 AEC-10062 B72-10366 04
 Bondability of RTV silicon rubber
 AEC-10026 B72-10367 04
 Technique for increasing yield of trifluoronitrosomethane-tetrafluoroethylene copolymer
 ARC-10566 B72-10418 04
 Process for synthesizing and formulating condensed ring polymers
 LANGLEY-10423 B72-10473 04
 Preparation of stable colloidal dispersions in fluorinated liquids
 HQ-10580 B72-10529 04
 Laser mass spectrometer
 ARC-10687 B72-10571 03
 Polyimide bonded graphite fluoride: A new long life solid lubricant coating
 LEWIS-11864 B72-10628 04
 A process yields large quantities of pure ribosome subunits
 HQ-10662 B72-10653 05
 Breathing-metabolic simulator
 HQ-10766 B72-10657 05
 Metabolic simulation chamber
 HQ-10776 B72-10658 05
 Computer program for calculation of complex chemical equilibrium compositions
 LEWIS-11714 B72-10718 09

CHEMICAL COMPOUNDS

Solid amine compounds as sorbents for carbon dioxide: A concept
 ARC-10571 B72-10421 04
 Three bit mass spectral search program
 NPO-11960 B72-10747 09

CHEMICAL ELEMENTS

An empirical relationship for the penetration of 1 to 3 MeV electrons
 LEWIS-11495 B72-10144 04
 Aerotherm chemical equilibrium (ACE) computer program
 LEWIS-11722 B72-10739 09

CHEMICAL ENERGY

Thermionic triode generates ac power
 ERC-10284 B70-10499 01
 Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04

CHEMICAL ENGINEERING

Space-suit carbon dioxide absorption system: A concept
 ARC-10546 B72-10168 05

CHEMICAL EQUILIBRIUM

Insolubilization process increases enzyme stability
 ARC-10314 B71-10443 04
 Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
 LANGLEY-11048 B72-10067 09
 Computer program for calculation of complex chemical equilibrium compositions
 LEWIS-11714 B72-10718 09
 Chemical equilibrium of ablation materials including condensed species
 LANGLEY-11801 B75-10225 04

CHEMICAL INDICATORS

Microwave dosimeter - A concept
 HQ-10407 B71-10075 01

CHEMICAL LASERS

Chemical-ionization visible and ultraviolet gas lasers: A concept
 NPO-13289 B75-10115 03

CHEMICAL MACHINING

Accurate pointing of tungsten welding electrodes
 ARG-10449 B71-10048 08

CHEMICAL PROPERTIES

A program for computing shock-tube gas dynamic properties
 NPO-11068 B70-10133 09
 High expansion coefficient glasses can be sealed to common metals
 LEWIS-10698 B70-10429 08
 Low temperature uses of helium
 LEWIS-11171 B70-10673 03
 Teardown analysis for detecting shelf-life degradation
 M-FS-24017 B71-10195 04
 Mercury in the environment
 AEC-10048 B72-10233 05
 Devolatilization of polymer resins
 GSFC-11358 B72-10280 04
 Floating zone process for drawing small diameter fibers of refractory materials
 LEWIS-11380 B72-10491 04
 Immobilized phosphorylase for synthesis of polysaccharides from glucose
 ARC-10680 B72-10550 04

CHEMICAL REACTION CONTROL

Insolubilization process increases enzyme stability
 ARC-10314 B71-10443 04

CHEMICAL REACTIONS

CHEMICAL REACTIONS

Improved process for synthesizing anilinosilane compounds
 M-FS-14948 B70-10105 04
 Polymerization of perfluorobutadiene
 NPO-10863 B70-10131 04
 New hyperthermal thermosetting heterocyclic polymers
 LANGLEY-10221 B70-10403 04
 Process for synthesizing a new series of fluorocarbon polymers
 NPO-10862 B70-10453 04
 Growing single crystals in silica gel
 ERC-10306 B70-10479 02
 Nondestructive spot tests allow rapid identification of metals
 LANGLEY-10539 B70-10520 04
 Determination of nitrogen in titanium nitride
 LEWIS-11046 B70-10588 04
 Nonflammable organic adhesives effective over wide temperature range
 MSC-13586 B70-10644 04
 Preparation of highly fluorinated polyurethanes
 NPO-10767 B71-10005 04
 Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
 MSC-17153 B71-10097 04
 A new metalation complex for organic synthesis and polymerization reactions
 NPO-10313 B71-10210 04
 Instrument detects bacterial life forms
 GSFC-10972 B71-10312 05
 Solvation agent for disulfide precipitates from inhibited glycol-water solutions
 MSC-13695 B71-10331 04
 Flame resistant elastic elastomeric fibers
 MSC-13923-4 B72-10005 04
 New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
 LEWIS-11323 B72-10175 04
 Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04
 Devolatilization of polymer resins
 GSFC-11358 B72-10280 04
 Polyimide foams provide thermal insulation and fire protection
 ARC-10464 B72-10300 04
 Catalyst for sodium chlorate decomposition
 ARC-10584 B72-10305 04
 Synthesis of temperature and solvent-resistant polymers
 M-FS-20848 B72-10342 04
 Polymeric binder for explosives
 AEC-10062 B72-10366 04
 Technique for increasing yield of trifluoronitrosomethane-tetrafluoroethylene copolymer
 ARC-10566 B72-10418 04
 Regenerable metallic oxide systems for removal of carbon dioxide: A concept
 ARC-10570 B72-10420 04
 Solid amine compounds as sorbents for carbon dioxide: A concept
 ARC-10571 B72-10421 04
 Phosphonium chloride for thermal storage
 ARC-10572 B72-10422 04
 Improved magnesia for thermal control coatings
 ARC-10677 B72-10424 04

- Strengthening lightweight concrete
AEC-10017 B72-10430 04
- Electron beam chemistry produces high purity metals
LEWIS-11639 B72-10439 04
- Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04
- Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04
- Functionally terminated liquid nitroso fluorocarbon terpolymers
M-FS-21539 B72-10493 04
- A reusable prepositioned ATP reaction chamber
HQ-10660 B72-10525 05
- New type of trifunctional alcohol
NPO-10714 B72-10553 04
- Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04
- Chemical kinetics computer program for static and flow reactions
LEWIS-11467 B72-10580 04
- High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04
- A process yields large quantities of pure ribosome subunits
HQ-10662 B72-10653 05
- Automation of Bosch reaction for CO₂ reduction
M-FS-21674 B72-10666 04
- Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04
- Low-void polyimide resins for autoclave processing
LEWIS-11665 B72-10728 04
- Radiochemical synthesis of pure anhydrous metal halides
LEWIS-11860 B73-10407 04
- CHEMICAL REACTORS**
- Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
- Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
- Catalytic reactor with disposable cartridge
ARC-10747 B73-10376 04
- Improved chemical vapor-deposition reactor
NPO-13650 B75-10212 08
- CHEMICAL STERILIZATION**
- Chemical pretreatment for the distillation of urine
JSC-14225 B73-10224 04
- Iodine generator for disinfecting reclaimed water
MSC-14632 B74-10153 05
- CHEMICAL TESTS**
- Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
- CHEMILUMINESCENCE**
- Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05
- Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
- Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 B75-10170 05
- CHEMISORPTION**
- Ultra-high molecular sink vacuum chamber
NPO-10799 B70-10130 03
- Adhesion theory review
AEC-10083 B72-10231 04
- CHEMISTRY**
- Three bit mass spectral search program
NPO-11960 B72-10747 09
- CHEMOTHERAPY**
- Implantable drug therapy device: A concept
NPO-11934 B72-10708 05
- Covalent bonding of polycations to small polymeric particles
NPO-13487 B75-10327 04
- New urea-absorbing polymers for artificial kidney machines
NPO-13620 B75-10336 04
- CHIMNEYS**
- Airfoil disperses smokestack effluents upward
LANGLEY-11669 B75-10074 06
- Handbook for estimating toxic fuel hazards
M-FS-21114 B75-10198 04
- Laser-excited fluorescence for measuring atmospheric pollution
NPO-13231 B75-10275 02
- CHIPPING**
- Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07
- CHIPS**
- Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
- Power semiconductor device with negative thermal feedback
HQ-10577 B70-10262 01
- Universal router concept
M-FS-20756 B70-10313 07
- Study of second breakdown in power transistors using infrared techniques
M-FS-20748 B71-10021 01
- Refrigerated cutting tools improve machining of superalloys
LANGLEY-10488 B71-10076 08
- Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
- Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 B71-10375 08
- Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
- Microminiature gas chromatographic column
ARC-10594 B72-10306 04
- Redundancy approaches in bubble domain memories
M-FS-21915 B72-10643 01
- CHLORATES**
- Progress in research on chlorate candle technology
MSC-13409 B70-10258 04
- CHLORIDES**
- Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04
- CHLORINE**
- Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
MSC-17153 B71-10097 04
- Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
- A silver ion water sterilization system
MSC-15734 B71-10278 04
- Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
- Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
M-FS-21113 B72-10321 04
- Al/Cl₂ molten salt battery
HQ-10696 B72-10527 01
- CHLORINE COMPOUNDS**
- Development of conformal coating materials
M-FS-21393 B71-10483 04
- CHLORINE FLUORIDES**
- Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
- Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
- CHLOROBENZENES**
- Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
- CHLOROETHYLENE**
- Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04
- CHLOROFORM**
- Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04
- CHLOROPHYLLS**
- Assessment of water pollution by airborne measurement of chlorophyll
ARC-10648 B72-10566 04
- Dye laser remote sensing of marine plankton
LANGLEY-11382 B73-10359 05
- CHLOROPRENE RESINS**
- Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 B71-10337 06
- Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
- CHLOROSILANES**
- Improved process for synthesizing anilinosilane compounds
M-FS-14948 B70-10105 04
- CHOKES (FUEL SYSTEMS)**
- Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
- CHOKES (RESTRICTIONS)**
- Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
- Ultrathin gate valve for high vacuum operation
GSFC-11028 B71-10412 07
- Circuit controls turn-on current
NPO-11339 B72-10079 01
- CHORDS (GEOMETRY)**
- Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06

SUBJECT INDEX

CHROMATES

Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03

Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 B71-10355 05

Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03

Dichromated-gelatin hologram process for improved optical quality
M-FS-23170 B75-10099 03

CHROMATOGRAPHY

Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03

Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03

TLC determination of functionality in prepolymers
NPO-11731 B73-10037 04

'Dry-column' chromatography of plant pigments
ARC-10780 B73-10271 04

Automated drug identification system
NPO-13063 B74-10213 05

CHROMIUM

Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 B70-10183 04

Accurate reassembly of small broken test specimens
M-FS-16730 B70-10455 07

Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03

Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09

Electroplating on titanium alloy
M-FS-21251 B71-10338 08

Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 B72-10440 03

Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04

Survey of coatings for solar collectors
LEWIS-12510 B75-10067 04

CHROMIUM ALLOYS

Directionally solidified superalloy
HQ-10522 B70-10058 04

Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04

Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04

Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 B70-10210 04

Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04

Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04

A protective coating for stainless steel
LEWIS-11267 B72-10256 04

Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04

Oxidation resistant, thoria-dispersed nickel-chromium-aluminum alloy
LEWIS-11541 B73-10077 04

CHROMIUM COMPOUNDS

Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

CHROMIUM OXIDES

Improved fire-resistant coatings
GSFC-10072 B71-10198 04

Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04

CHROMIUM STEELS

Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04

CHRONOLOGY

Limited life item management
M-FS-24020 B71-10196 06

CHRONOMETERS

Quasars as very-accurate clock synchronizers
NPO-13276 B75-10114 02

CHRONOPHOTOGRAPHY

Time-lapse camera for microscopy
ARC-10423 B72-10125 05

CIRCADIAN RHYTHMS

An ingestible temperature-transmitter
ARC-10583 B72-10275 01

CIRCUIT BOARDS

Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01

Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01

Integrated circuit flat-pack lead bender
MSC-13489 B70-10117 01

Holographic stress analysis
M-FS-20687 B70-10123 01

A new low-expansion nonflammable printed circuit board
M-FS-20408 B70-10154 01

Applications of gap welding
M-FS-20715 B70-10155 08

A vapor barrier for cold testing printed circuit cards
M-FS-15115 B70-10172 01

Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01

Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 B70-10241 08

Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04

Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04

Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04

Coplanar interconnection module
ERC-10237 B70-10378 01

Economical printed circuit front panel for computer use
KSC-10573 B70-10560 01

Ground computer test trap
KSC-10574 B70-10561 09

PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09

CIRCUIT DIAGRAMS

Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02

Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08

Magnetic circuitry mutual coupling probe
M-FS-21664 B72-10535 02

A simple, efficient resistance soldering apparatus
GSFC-10913 B72-10649 08

A new packaging and testing concept for microelectronic components
M-FS-20936 B73-10109 01

Positive contact resistance soldering unit
KSC-10242 B73-10145 02

Welded printed circuit (pc) stick
GSFC-11773 B73-10393 01

New standoffs provide high-reliability component mounting for printed wiring boards
LANGLEY-11176 B73-10512 01

Improved circuit-board interconnectors
MSC-12661 B74-10239 01

Improved printed-wiring boards for high-reliability circuits
M-FS-23147 B75-10039 01

CIRCUIT BREAKERS

Fuse and switch functions combined within a single housing
HQ-10497 B70-10003 01

Latching overcurrent circuit breaker
NPO-11131 B70-10524 01

High temperature circuit breaker
LEWIS-90265 B70-10721 01

A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02

Current switch has built-in time delay: A concept
MSC-17324 B72-10453 01

Thermally responsive mechanical actuator
GSFC-11697 B73-10208 04

Logic controlled solid state switchgear
LEWIS-12044 B73-10408 02

CIRCUIT DIAGRAMS

Antenna-array, phase quadrature tracking system
MSC-12205 B70-10095 02

Constant current source for converting absolute temperatures to analog voltages
NPO-10733 B70-10164 02

Design procedure for improved active filters
M-FS-20445 B70-10238 02

Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02

Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02

A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01

Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01

Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01

Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02

CIRCUIT PROTECTION

SUBJECT INDEX

Brushless direct-current motor with stationary armature and field
XGS-05290 B70-10691 02
Digital simulation program improved
M-FS-01504 B70-10705 09
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01
A reliable liquid helium detector
LEWIS-11487 B72-10145 01
Low phase-shift amplifier
NPO-11663 B72-10185 01
Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03
Pulse-width-modulated device for precision temperature control
NPO-11407 B72-10507 02
A compact battery powered digital thermometer
MSC-14084 B72-10545 02
Photomultiplier blanking circuit
ARC-10593 B72-10561 01
A simplified, compact static shift register
HQ-10723 B72-10591 02
DC motor proportional control system for orthotic devices
M-FS-21573 B72-10617 05
A range expanding signal conditioner
M-FS-21720 B72-10639 02
Speech therapy and voice recognition instrument
HQ-10628 B72-10652 05
Low distortion automatic phase control circuit
M-FS-21671 B72-10682 02
New detection method for rolling element and bearing defects
M-FS-21911 B72-10689 06
Waveguide switch protector
NPO-11592 B72-10705 01
Automatic method of measuring silicon-controlled-rectifier holding current
LEWIS-11898 B72-10752 02

CIRCUIT PROTECTION

Two terminal current limiter
NPO-11350 B70-10232 01
Transistor current and voltage limiting switch
NPO-11166 B70-10414 01
A conceptual current surge protector for incandescent lamps
M-FS-16658 B70-10483 01
Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
Development of conformal coating materials
M-FS-21393 B71-10483 04
Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02

New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
Photomultiplier blanking circuit
ARC-10593 B72-10561 01
Electroshock protection circuit
JSC-14222 B73-10261 02
Fail-safe bidirectional valve driver
NPO-11958 B73-10450 07
Self-healing fuse
LEWIS-11964 B74-10004 02
Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01
A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
LEWIS-12109 B75-10068 02

CIRCUIT RELIABILITY

Efficient/reliable dc-to-dc inverter circuit
XGS-06226 B70-10425 01
Active parallel redundancy for electronic integrator-type control circuits
NUC-10231 B71-10040 01
Magnetic circuitry mutual coupling probe
M-FS-21664 B72-10535 02
Improved printed-wiring boards for high-reliability circuits
M-FS-23147 B75-10039 01
JPL transient radiation analysis by computer program (JTRAC)
NPO-13470 B75-10053 09

CIRCUITS

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
Signal conditioner circuit for photomultiplier tube
XLA-10773 B70-10096 01
Multi-frequency resonant antenna
HQ-10215 B70-10098 02
Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05
Acoustic vibration test detects intermittent electrical discontinuities
MSC-15158 B70-10118 01
Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
Communications link for SDS 900 series computers
NPO-11161 B70-10163 02
Electronic position indicator for latching solenoid valves
LEWIS-10926 B70-10174 01
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
Audio signal processor
MSC-12223 B70-10180 01
Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
Color identification testing device
KSC-10278 B70-10264 01
Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01

Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01
Constant-amplitude RC oscillator
ARC-10262 B70-10338 01
Nonequal iteration directional filters permit selective clearance of ripples in passband circuits
ERC-10313 B70-10385 01
Dual current readout for precision plating
MSC-15673 B70-10392 01
Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
Concept for a distributed processor computer
ERC-10271 B70-10481 02
Concept for high speed computer printer
KSC-10373 B70-10484 09
Controlled current inductors
ERC-10139 B70-10494 01
Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
Thermionic triode generates ac power
ERC-10284 B70-10499 01
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
Plasma conductivity gage
ARC-10147 B70-10510 03
Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 B70-10534 01
Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01
Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
Technique for lowering the noise figure in RF amplifiers
HQ-10435 B70-10650 01
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01

c - 4

SUBJECT INDEX

Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02
Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 B71-10069 01
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01
Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
High voltage lightning grounding device
LEWIS-11282 B71-10136 01
Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01
Electronic ripple indicator
KSC-10162 B71-10170 01
A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
Portable circuit-interruption indicator
KSC-10546 B71-10246 02
Study of nondestructive techniques for redundancy verification
KSC-10661 B71-10258 02
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 B71-10275 01
Automatic transmission line monitor
KSC-10385 B71-10288 02
Multifunction audio digitizer for communications systems
MSC-13855 B71-10318 02
Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
Voltage regulator dissipates minimal power and functions as a voltage divider
B71-10367 01

High efficiency telemetry method
NPO-10388 B71-10371 02
Tolerance analysis program
MSC-17487 B71-10389 09
Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02
Durability tester for FCC connectors
M-FS-20128 B71-10418 08
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02
Solar experiment alignment system
ARC-10471 B72-10020 03
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05
Pseudo-saturating power converter
NPO-11368 B72-10042 01
A differential ECG amplifier with single-ended output
ARC-10411 B72-10061 05
Oxygen pressure control for electrolysis cells
ARC-10250 B72-10074 02
Precision voltage regulator
NPO-11502 B72-10092 01
Piezoelectric actuator system uses sequentially-excited multiple elements: A concept
NPO-11527 B72-10096 01
Soldering iron temperature indicator
NPO-11545 B72-10098 02
Tornado detector and alarm
M-FS-20915 B72-10106 01
Frequency switch keyed oscillator
ARC-10412 B72-10124 01
High solar intensity radiometer
LEWIS-11533 B72-10130 03
Heart simulator
M-FS-21609 B72-10131 02
Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09
Crystal-controlled multivibrator
NPO-11627 B72-10155 01
Differential input preamplifier
ARC-10489 B72-10165 01
Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01
Driver circuit for inductive loads
ARC-10073 B72-10268 01
Lightning flash detection system
ARC-10562 B72-10272 02
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
Control of oscillations in a discharge circuit
ARC-10556 B72-10304 01
Guidelines for fabrication of hybrid microcircuits
M-FS-21964 B72-10393 01
Ultrasonic bone densitometer
M-FS-20994 B72-10450 05
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
Specification guidelines for hybrid microcircuits
M-FS-22090 B72-10474 01
A magnetic mouse activity meter
HQ-10664 B72-10482 05

Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
Redundancy approaches in bubble domain memories
M-FS-21915 B72-10643 01
Diode-quad bridge for reactive transducers and FM discriminators
ARC-10364 B72-10691 01
Waveguide switch protector
NPO-11592 B72-10705 01
Analysis of circuits including magnetic cores (MTRAC)
NPO-11494 B72-10724 02
Frequency-to-amplitude converter: A concept
MSC-12395 B72-10729 01
Improved measurement of depth perception
M-FS-14133 B72-10730 05
Complementary MOS four-phase logic circuits
JSC-14240 B73-10174 01
Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01
Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02
Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01
Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01
Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01
Electronic high pass filter
LEWIS-11600 B74-10083 02
Generalized current distribution rule
LANGLEY-11565 B74-10093 02
Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02
Frequency discriminator/phase detector
NPO-11515 B74-10098 02
Decimal digit generator for commutated data: A Concept
ARC-10856 B74-10120 01
Improved capacitance multiplier circuit
NPO-11948 B74-10162 02
Advanced-priority interrupt module
NPO-13067 B74-10165 02
Wide deviation phase modulator
LANGLEY-11607 B74-10178 02
Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02
Heart-rate pulse-shift detector
ARC-10729 B74-10196 01
Digital multichannel photometer
HQ-10791 B74-10200 03
Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
Reliability data for electronic and electromechanical components: A report
NPO-13153 B74-10280 01
Integrated-circuit balanced parametric amplifier
M-FS-23193 B75-10102 01

CIRCUITS

CIRCULAR CYLINDERS

Microelectronic fabrication of superconducting devices and circuits
NPO-13419 B75-10120 01
System for simultaneous, bidirectional data transmission
MSC-14810 B75-10171 01
New broadband square-law detector
NPO-13410 B75-10180 02
Automated statistical analysis program (ASAP)
LANGLEY-11125 B75-10217 02
Simple temperature sensor with direct readout
LANGLEY-11818 B75-10260 01
Highly stable analog-to-digital converter
NPO-13385 B75-10277 01
Microcircuit testing and fabrication, using scanning electron microscopes
M-FS-23159 B75-10304 01

CIRCULAR CYLINDERS

Miniature spray-painting booth
MSC-15811 B70-10549 03
Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 B70-10690 03
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Thermally actuated valve
NPO-11846 B73-10347 06

CIRCULAR ORBITS

Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
New procedure for determining minimum time orbit transfers
M-FS-14804 B71-10376 09
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09

CIRCULAR PLATES

High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07

CIRCULAR POLARIZATION

Improved modified turnstile antenna
MSC-12209 B70-10482 01
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
Microwave dosimeter - A concept
HQ-10407 B71-10075 01
Microstrip antennas
LANGLEY-11284 B73-10179 01
Circularly-polarized multiband telemetry tracking antenna
NPO-11264 B73-10288 02
Improved circularly polarized antenna
ERC-10214 B74-10250 02
Low-loss, circularly-polarized dichroic plate
NPO-13171 B74-10283 01
Multibeam-antenna feed system to isolate orthogonally polarized beams
NPO-13140 B75-10046 02

CIRCULAR SHELLS

Production of circular polymer-glass fabric composites
M-FS-22125 B73-10069 04

CIRCULAR TUBES

Velocity accelerator for particles
NPO-11349 B72-10082 03

CIRCULATION

Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06

CIRCULATORS (PHASE SHIFT CIRCUITS)

Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01

CIVIL DEFENSE

Medical vest broadens treatment capability
KSC-10577 B70-10529 05

CLADDING

Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08

CLAMPS

Flexible or rigid extending arm
MSC-13512 B70-10465 07
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Instant acting adhesive system
MSC-13732 B71-10317 04
Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08
Chuck for delicate drills
ARC-10660 B72-10414 07
Ultrasonic bone densitometer
M-FS-20994 B72-10450 05
Vise to hold bones or other irregular objects
ARC-10679 B72-10569 07
A band clamp with a spring toggle lever
MSC-14736 B74-10240 07

CLASSIFICATIONS

Pattern recognition technique
NPO-11337 B71-10187 06

CLASSIFIERS

Stellar spectrum classifier
MSC-13450 B70-10319 03

CLASSIFYING

Manpower forecast program
NPO-11551 B71-10244 09

CLAYS

Rubber composition compatible with hydrazine
NPO-11440 B73-10019 04

CLEAN ROOMS

Biological handbook for engineers
M-FS-20349 B70-10255 05
Miniature spray-painting booth
MSC-15811 B70-10549 03

CLEANERS

Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
Potentiometer, constant tension and lubrication device
KSC-10723 B72-10541 02

CLEANING

Improved linings for integrating spheres
MSC-12237 B70-10413 03
Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 B70-10475 04
Disc pack cleaning table saves computer time
LANGLEY-10590 B70-10532 09
Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07
Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04
Dropouts in magnetic tape recording and reproduction
NPO-11519 B71-10160 03
Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
Dry ice plug for hydraulic and pneumatic pipe flushing
MSC-12548 B72-10496 06
Handbook of cleaning requirements, procedures, and verification techniques for oxygen systems
LEWIS-11963 B73-10188 04
Industrial filter bags cleaned by high-frequency vibration: A concept
M-FS-24445 B73-10398 06
Backflushing system rapidly cleans fluid filters
JSC-14273 B73-10405 06
Procedure for dispersing fiber bundles
LANGLEY-11224 B73-10438 08
Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 B75-10282 06

CLEANLINESS

Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07
Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 B71-10236 03
Handbook of cleaning requirements, procedures, and verification techniques for oxygen systems
LEWIS-11963 B73-10188 04
Container seal for dusty environment
LANGLEY-10962 B73-10416 07

CLEARANCES

A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 B70-10287 07
Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08
Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 B73-10411 02

CLIMATOLOGY

Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03

CLINICAL MEDICINE

Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
Combination syringe provides air-free blood samples
MSC-12320 B70-10545 05
Automated single-slide staining system
LANGLEY-11649 B74-10188 05
Automated drug identification system
NPO-13063 B74-10213 05
Implantable prosthetic pump boosts blood pressure: A concept
NPO-13626 B75-10177 05

CLIPS

Electrical test wire attachment device
KSC-10562 B70-10488 01
High mobility work station restraint support
MSC-12419 B71-10301 07

CLOCKS

Digital-voltage curve generator
NPO-11104 B70-10590 02
System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
On-line analysis of random vibrations
ARC-10154 B71-10284 09
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
Digital aspect clock
ARC-10088 B71-10440 02
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Method to determine vented electrochemical cell quality
GSFC-11216 B72-10396 04
A fault-tolerant clock
JSC-12531 B73-10218 09
Inexpensive programmable computer clock
LEWIS-11797 B73-10308 02
Small portable speed calculator
M-FS-22638 B73-10329 07
Quasars as very-accurate clock synchronizers
NPO-13276 B75-10114 02

CLOSED CIRCUIT TELEVISION

Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Closed-circuit television welding-electrode guidance system
M-FS-23026 B74-10150 02
Video switcher for coupling video cameras to single TV monitor
KSC-10782 B75-10192 02

CLOSED CYCLES

Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
Volume-checking tool
KSC-10514 B70-10502 07
Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02

CLOSED ECOLOGICAL SYSTEMS

Carbon dioxide concentrator
ARC-10245 B72-10194 05
Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
Trace contaminant adsorption and sorbent regeneration in closed ecological systems
LANGLEY-10681 B72-10328 04

CLOSING

Easy manual operation of overhead garage doors - A concept
KSC-10555 B70-10543 07

CLOSURES

Medical vest broadens treatment capability
KSC-10577 B70-10529 05

CLOTHING

Improved reinforcement for openings in difficult fabrics
MSC-13554 B70-10489 08
Medical vest broadens treatment capability
KSC-10577 B70-10529 05
A versatile flammability test chamber
KSC-10126 B73-10111 06
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

CLOUD PHOTOGRAPHS

Cloud-free resolution element statistics program
GSFC-11494 B71-10463 09

CLOUDS (METEOROLOGY)

Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
Measuring the electric field of a cloud
KSC-10731 B73-10074 02

CLUMPS

Method of identifying clusters representing statistical dependencies in multivariate data
ARC-10744 B75-10140 09

CLUTCHES

Magnetic gear backup
MSC-13408 B70-10087 07
Two-speed wheel-drive system without lubrication
M-FS-20645 B70-10193 07
Peak wind speed anemometer / maxometer/
M-FS-20916 B71-10023 07
Improved orthopedic arm joint
M-FS-21611 B71-10485 05
Stem clutch for motor driven valve
LRL-10032 B72-10345 07
Magnetic particle clutch controls servo system
JSC-17136 B73-10041 06

COAGULATION

Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03

COAL

Fluidized-bed combustion reduces atmospheric pollutants
AEC-10085 B72-10431 04

COALESCING

Separation of gas from liquid in a two-phase flow system
NPO-11556 B73-10383 03

COANDA EFFECT

Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03

Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07

COARSENESS

Effect of size on cracking of materials
NPO-11602 B71-10158 04

COASTAL ECOLOGY

Gage for measuring coastal erosion and sedimentation
LANGLEY-10779 B70-10629 01

COATING

Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04
Granular two-phase insulation systems
NPO-12068 B71-10290 04
Shielding method for polycrystalline and epitaxy growths
M-FS-20162 B71-10434 04

COATINGS

Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
Self-lubricating fluorine shaft seal material
HQ-10112 B70-10222 04
Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Improved heat shield/radiator
NPO-11105 B70-10318 03
Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
Heat-rejection windows for telescopes
M-FS-20634 B70-10386 04
Improved linings for integrating spheres
MSC-12237 B70-10413 03
Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03
Collodion technique of mirror cleaning
LANGLEY-10675 B70-10463 04
New method for photoresist stripping
ERC-10239 B70-10497 04
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07
Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04
Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
Improved fire-resistant coatings
GSFC-10072 B71-10198 04
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
Plating by glass-bead peening
GSFC-11163 B71-10256 08

COAXIAL CABLES

Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 Effects of the thermal sterilization procedure on polymeric products
 NPO-11688 B71-10362 04
 Application of calibration masks to TV vidicon tube
 KSC-10589 B71-10404 02
 Hot-blade stripper for polyester insulation on FCC
 M-FS-20117 B71-10461 08
 Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02
 Oxygen-layer structure improves lithium-doped silicon solar cells
 NPO-11403 B72-10085 03
 Simple gas chromatographic system for analysis of microbial respiratory gases
 ARC-10403 B72-10207 03
 Nonflammable potting, encapsulating and/or conformal coating compound
 MSC-13499 B72-10337 04
 Laser beam deflection control: A concept
 MSC-13814 B72-10411 02
 Sintered diamond compacts using metallic cobalt binders
 HQ-10706 B72-10519 04
 Photoemissive coating
 M-FS-22003 B72-10638 08
 Nonflammable potting-encapsulating and conformal coating compounds
 JSC-14164 B73-10102 04
 Ultraviolet reflective coating
 GSFC-11786 B73-10469 04
 X-ray opaque additive for inspection of weld joints
 M-FS-22896 B73-10528 08
 Commercially available black chrome is an effective solar collector coating
 LEWIS-12159 B74-10121 04
 Metallized polymeric foam material
 ARC-10860 B74-10218 04
 Dielectric films improve life of polymeric insulators
 ARC-10892 B75-10084 04
 Automated electronic system for measuring thermophysical properties
 LANGLEY-11883 B75-10160 03
 Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03
 Low-Cost thin-layer silicon solar cells
 GSFC-12023 B75-10293 04
 Flammability study of materials in oxygen environments
 M-FS-23306 B75-10310 04

COAXIAL CABLES

Economical weatherproof helical antenna
 XKS-08485 B70-10016 01
 Radio frequency baseband recording technique
 HQ-10317 B70-10069 02
 Plasma conductivity gage
 ARC-10147 B70-10510 03
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Heart catheter cable and connector
 ARC-10406 B72-10200 05
 Digital data command bus
 NPO-11637 B73-10035 01
 A vacuum chamber feedthrough
 M-FS-21133 B73-10152 01

Design method for minimizing RF voltage breakdown
 NPO-13408 B73-10520 01
 Stable group delay cable
 NPO-13138 B74-10295 01
 Dual-band ridged waveguide
 LANGLEY-11781 B75-10091 01
 Temperature-stable Gunn-diode oscillator
 M-FS-23242 B75-10306 01

COAXIAL FLOW

Low pressure arc electrode
 ARC-10012 B70-10329 01
 Coaxial inverted geometry epitaxial transistor
 ARC-10330 B72-10056 01
 Two-stage coaxial gas compressor
 ARC-10426 B72-10210 06

COAXIAL PLASMA ACCELERATORS

Improved plasma accelerator
 ARC-10109 B71-10454 03

COBALT

Progress in research on chlorate candle technology
 MSC-13409 B70-10258 04
 High-temperature, long-life polyimide seals for hydraulic actuator rods
 LEWIS-11212 B71-10098 07
 Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
 Copper/nickel eutectic brazing of titanium
 ARC-10337 B71-10525 08
 Sintered diamond compacts using metallic cobalt binders
 HQ-10706 B72-10519 04
 Continuous catalytic decomposition of methane
 ARC-10339 B73-10016 03

COBALT ALLOYS

Directionally solidified superalloy
 HQ-10522 B70-10058 04
 Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 LEWIS-10515 B70-10185 04
 High expansion coefficient glasses can be sealed to common metals
 LEWIS-10698 B70-10429 08
 High-strength magnetic materials
 LEWIS-10697 B70-10596 03
 High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
 LEWIS-11229 B71-10489 04
 Advanced protective coating for superalloys
 LEWIS-11473 B72-10150 04
 Common bearing material has highest fatigue life at moderate temperature
 LEWIS-11592 B72-10382 04
 Advanced alloy design technique: High temperature cobalt base superalloy
 LEWIS-10436 B72-10514 04
 Autoclave heat treatment for prealloyed powder products
 LEWIS-11953 B73-10172 04
 Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
 LEWIS-11610 B73-10206 03
 Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
 LEWIS-12089 B74-10081 03

COBALT OXIDES

Catalyst for sodium chlorate decomposition
 ARC-10584 B72-10305 04

COBOL

PERT "C"
 M-FS-20164 B70-10184 09
 Reliability Analysis Model
 M-FS-14513 B70-10614 09
 Fiscal output data produce versatile graphic-numeric charts
 NUC-10394 B71-10108 09
 Manpower forecast program
 NPO-11551 B71-10244 09
 Manpower management information system /MIS/
 M-FS-21477 B71-10431 09
 Automated Data Management Information System (ADMIS)
 KSC-10619 B73-10053 09
 Logistics hardware and services control system
 KSC-10819 B73-10418 09
 Marshall information retrieval and display system (MIRADS)
 M-FS-22536 B74-10043 09
 Computer system for library access
 GSFC-11952 B75-10292 09

COCKPITS

Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
 Roll function in a flight simulator
 ARC-10557 B72-10417 02

CODERS

Block encoders for Reed-Muller codes
 NPO-10629 B70-10051 01
 Ranging code processor
 NPO-10066 B70-10060 02
 Block-coded communications
 NPO-11397 B70-10242 02
 A frequency division multiplex technique for transmitting commands
 KSC-10521 B71-10169 02
 An improved telemetry system
 ARC-10336 B71-10201 01
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 One-dimensional multimode and multistate oscillator: A concept
 HQ-10851 B75-10088 01

CODES

Systems of coding and their implementation
 NPO-11469 B71-10006 09

CODING

Digital data transition tracking loop improves data reception
 NPO-10844 B70-10009 02
 Hall effect encoding of brushless dc motors
 GSFC-10789 B70-10188 01
 Block-coded communications
 NPO-11397 B70-10242 02
 Color identification testing device
 KSC-10278 B70-10264 01
 Equipment-tolerant range code demodulation method - A concept
 M-FS-13987 B70-10267 01
 Self testing and repairing computer - A concept
 NPO-10567 B70-10452 09
 Improved convolutional coding
 MSC-13625 B70-10698 09

SUBJECT INDEX

SUBJECT INDEX

FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09

Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09

PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09

DSIF station schedules
NPO-11547 B71-10243 09

Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09

Thermal analysis system /TAS-1/ program
NPO-11849 B71-10386 09

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09

Computer program optimizes design of nuclear radiation shields
LEWIS-10998 B71-10400 09

GPEDIT
GSFC-11308 B72-10620 09

Binary concatenated coding system
JSC-14082 B73-10083 09

Flexible format, computer accessed telemetry system
NPO-11358 B73-10290 02

Fluorescent color coding of power receptacles
MSC-19504 B75-10109 01

Generation of key in cryptographic system for secure communications
NPO-13451 B75-10278 09

COEFFICIENT OF FRICTION
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04

Self-lubricating fluorine shaft seal material
HQ-10112 B70-10222 04

Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04

Longitudinal friction forces in piping design
M-FS-13754 B72-10103 01

Apparatus for measuring static coefficient of friction under compressive loads
GSFC-11893 B75-10214 06

COEFFICIENTS
Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04

A new low-expansion nonflammable printed circuit board
M-FS-20408 B70-10154 01

High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08

High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08

High efficiency telemetry method
NPO-10388 B71-10371 02

Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01

COERCIVITY
Coercive force of thin magnetic films
NPO-10750 B70-10221 03

COHERENT LIGHT

Diffusion filter eliminates fringe effects of coherent laser light source
NPO-10417 B70-10226 03

Multipass holographic interferometer improves image resolution
HQ-10499 B70-10426 03

Holographic analysis of thin films
M-FS-20823 B70-10654 08

Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 B71-10236 03

Particle detection with intensified laser beam
HQ-10645 B72-10516 03

Laser velocimeter for simultaneous two-dimensional velocity measurements
ARC-10637 B73-10267 02

COHERENT RADIATION

The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03

Transmission of optical frequencies with minimal losses
HQ-10541 B72-10389 03

Particle detection with intensified laser beam
HQ-10645 B72-10516 03

Measurement of electron density and temperature in plasmas
ARC-10598 B72-10563 03

A nonlinear-coherence receiver
NPO-11921 B73-10144 02

Coherence-length extender
M-FS-22434 B73-10399 03

COHESION

Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03

Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04

COILS

Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02

Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07

Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07

Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03

Radiographic inspection specifications for electronic components
M-FS-20723 B71-10438 01

Thermal analog device reduces machining errors
AEC-10080 B72-10237 08

Energy absorber uses expanded coiled tube
AEC-10044 B72-10239 06

Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03

COINCIDENCE CIRCUITS

Delay-lock-loop code-correlation synchronizer
GSFC-11868 B75-10291 02

COKE

Producing graphite with desired properties
NUC-11001 B71-10042 04

COLLIMATION

Low temperature fluid blender
LEWIS-11206 B71-10058 04

Estimating carbon monoxide exposure
MSC-17211 B71-10319 04

Fluidized-bed combustion reduces atmospheric pollutants
AEC-10085 B72-10431 04

COLD CATHODES
Improved magnetron cold-cathode ion source
LANGLEY-10387 B70-10023 02

COLD FLOW TESTS
Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07

COLD GAS
Separation of two bodies in space
NPO-10663 B70-10625 09

Proportional pulsed pilot valve
ARC-10228 B71-10468 07

Adaptive position control loop
ARC-10255 B72-10052 02

Gas leak-detection system
NPO-11405 B72-10087 03

COLD SURFACES
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09

High density electronic packaging module with improved cooling assembly
MSC-13639 B71-10088 01

COLD TRAPS
Photoionization mass spectrometer
HQ-10167 B70-10113 03

Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 B71-10212 08

COLD WATER
Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03

Glass tube splitting tool
MSC-17183 B71-10516 07

COLD WELDING
Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04

Surface treatment for valve seats
NPO-10779 B70-10202 08

COLD WORKING
Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08

COLLAPSE
Core drill's bit is replaceable without withdrawal of drill stem - A concept
M-FS-20819 B70-10391 07

Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09

COLLIMATION
Stellar spectrum classifier
MSC-13450 B70-10319 03

Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03

Ambient-light-absorbing screen for front projection
ERC-90017 B70-10472 03

Concept for high speed computer printer
KSC-10373 B70-10484 09

Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 B70-10568 05

COLLIMATORS

Photosensitive plastic used to produce three-dimensional casting patterns
 LANGLEY-10742 B71-10127 08
 Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 B71-10232 03
 Variable ratio beam splitter for laser applications
 ARC-10391 B71-10265 03
 An improved apochromatic wedge utilizing optical molecular contact bonding
 GSFC-11082 B72-10388 03
 A new low-cost method for producing collimating mirrors
 LEWIS-11553 B72-10513 08
 Holographic direct-vision spectroscopy
 LANGLEY-11750 B75-10090 03

COLLIMATORS

Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 A 7.6m /25-ft/ extreme environments simulator
 NPO-11353 B71-10036 03
 Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
 Solar experiment alignment system
 ARC-10471 B72-10020 03
 Solar sensor with autocollimator
 ARC-10148 B72-10192 03
 Interferometric rotation sensor
 ARC-10278 B72-10274 03
 Variable-beamwidth antennas
 GSFC-11760 B74-10041 02
 Acoustic-optic deflector telescope
 M-FS-23107 B74-10293 03
 Collimation of electron and X-ray beams using zeolite crystals
 NPO-13557 B75-10329 03

COLLISION AVOIDANCE

Very high frequency digital rangine system
 MSC-15763 B70-10284 02
 Short-range laser obstacle detector
 NPO-11856 B74-10101 03

COLLISIONS

A real time moving-scene holographic camera
 M-FS-21087 B73-10421 03

COLLOIDING

Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03
 Automatic device for shell freezing of liquids
 GSFC-11737 B73-10253 04

COLLOIDS

Electrodynamic induction flowmeter
 HQ-10230 B70-10024 01
 Diffusion filter eliminates fringe effects of coherent laser light source
 NPO-10417 B70-10226 03
 Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04
 Developments in spectrophotometry II: A multiple-frequency particle-size spectrometer
 NPO-13606 B75-10333 03
 Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
 NPO-13614 B75-10335 03

COLOR

Color identification testing device
 KSC-10278 B70-10264 01

Color television system using single gun color cathode ray tube
 ERC-10098 B70-10464 02
 Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04
 Kaleidoscopic light feedback for television systems
 MSC-12386 B71-10068 03
 Angular velocity and acceleration meter
 LEWIS-11466 B72-10183 06
 Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03
 Silver stain for electron microscopy
 ARC-10661 B72-10415 05
 Carbon dioxide concentration indicator
 HQ-10582 B72-10526 05
 A visual-display and storage device
 GSFC-10901 B72-10647 02
 Color-coded area sensitivity maps of photomultipliers
 LANGLEY-10320 B74-10259 01

COLOR CENTERS

Improved magnesia for thermal control coatings
 ARC-10677 B72-10424 04

COLOR PHOTOGRAPHY

Multispectral facsimile reproducer
 LANGLEY-10618 B70-10360 03
 A rapid, precise, reciprocating-movement color filter system
 GSFC-11255 B72-10497 07

COLOR TELEVISION

Luminescent screen composition and apparatus
 ERC-10010 B70-10440 01
 Color television system using single gun color cathode ray tube
 ERC-10098 B70-10464 02
 Phase locking of field sequential color wheel for small TV camera
 MSC-13857 B71-10326 02
 Television noise-reduction device
 JSC-12607 B73-10431 02

COLOR VISION

Color identification testing device
 KSC-10278 B70-10264 01

COLORIMETRY

Colorometric detection of ethylene glycol vapor
 MSC-13222 B70-10031 03
 Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Automated method for study of drug metabolism
 ARC-10469 B73-10030 04

COLUMNS (PROCESS ENGINEERING)

Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04
 Microminiature gas chromatographic column
 ARC-10594 B72-10306 04
 A permeable rotating-wheel solvent extractor
 LRL-10033 B72-10343 04
 Quick-change absorption column
 ARC-10952 B75-10142 03

COLUMNS (SUPPORTS)

Hoop restraint on beam-column behavior in a stiffened cylindrical shell
 M-FS-16172 B70-10394 06
 Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
 M-FS-20556 B70-10598 06

COMBUSTION

Ultrasonic propagation in gases at high temperatures
 HQ-10498 B70-10137 03
 Polyimide polymers provide improved ablative materials
 LEWIS-10861 B70-10300 04
 Saturn S-2 base environment for flight evaluation
 M-FS-16597 B70-10555 09
 Technique for in-place welding of aluminum backed up by a combustible material
 LEWIS-11328 B71-10257 08
 Remote control flare stack igniter for combustible gases
 M-FS-21675 B72-10352 07
 Chemical kinetics computer program for static and flow reactions
 LEWIS-11467 B72-10580 04

COMBUSTION CHAMBERS

Heat-resistant pressure probe with high-frequency response
 NPO-11292 B70-10252 06
 Gas turbine combustor insensitive to compressor outlet distortion
 LEWIS-10286 B70-10312 07
 Swirl-can combustor segment
 LEWIS-11082 B70-10322 07
 Heat-barrier coatings for combustion chambers
 M-FS-18618 B70-10363 07
 Resonance tube igniter
 LEWIS-11219 B70-10618 04
 Spray momentum measuring system
 MSC-12305 B71-10137 05
 Computer-controlled mass spectrometer for on-line gas analysis
 NPO-11427 B71-10191 03
 Fabrication techniques for thoriated-dispersed /TD/ nickel
 LEWIS-11240 B71-10369 08
 Antipollution system to remove nitrogen dioxide gas
 LEWIS-11297 B71-10393 04
 Airflow distribution control for improved turbine engine performance
 LEWIS-11593 B72-10178 07
 Turbulent mixing film cooling correlation
 LEWIS-11417 B72-10326 07
 Zone radiometer measurements on a model rocket exhaust plume
 M-FS-21693 B72-10357 02
 Analysis and computer programs to calculate acoustic wave properties of baffled chambers
 LEWIS-11529 B72-10577 09
 Metabolic simulation chamber
 HQ-10776 B72-10658 05
 Experimental verification of computer spray-combustion models
 ARC-10689 B73-10031 03
 Computer program to determine the irrotational nozzle admittance
 LEWIS-12019 B73-10233 09
 Design handbook for gaseous fuel engine injectors and combustion chambers
 LEWIS-12154 B73-10412 07
 Investigations of multiple jets in a crossflow
 LEWIS-12102 B75-10149 03
 A new high temperature noble metal thermocouple pairing
 LEWIS-12545 B75-10245 03

COMBUSTION CONTROL

Controlled droplet spray generator
LEWIS-11193 B70-10652 07
Flame zone of a composite propellant
expanded by a laser source
LANGLEY-10660 B71-10335 03

COMBUSTION EFFICIENCY

Air assist fuel nozzle reduces aircraft gas
turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
Design handbook for gaseous fuel engine
injectors and combustion chambers
LEWIS-12154 B73-10412 07
Improved air atomizing splash-groove
fuel injector reduces pollutant emissions
from turbojet engines
LEWIS-12417 B75-10190 06

COMBUSTION PHYSICS

An unconfined, large-volume
hydrogen/air explosion
NUC-11000 B71-10041 03
Fluidic systems may improve combustion
in automotive engines
ARC-10582 B72-10250 06
Zone radiometer measurements on a
model rocket exhaust plume
M-FS-21693 B72-10357 02
Air assist fuel nozzle reduces aircraft gas
turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07

COMBUSTION PRODUCTS

Self-sealing propellant-actuated device
eliminates atmosphere contamination
NPO-11013 B70-10248 07
Advanced protective coating for
superalloys
LEWIS-11473 B72-10150 04
Zone radiometer measurements on a
model rocket exhaust plume
M-FS-21693 B72-10357 02
Fluidized-bed combustion reduces
atmospheric pollutants
AEC-10085 B72-10431 04
Air assist fuel nozzle reduces aircraft gas
turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
Squib-operated disconnect
NPO-11330 B72-10713 06
Autoignition test cell with flexible
atmosphere control
KSC-10198 B73-10113 04
Combustion products generating and
metering device
GSFC-11095 B74-10036 04
Properties of air and combustion products
of fuel with air
LEWIS-12402 B75-10004 03
Improved air atomizing splash-groove
fuel injector reduces pollutant emissions
from turbojet engines
LEWIS-12417 B75-10190 06

COMBUSTION STABILITY

Digital computer program for analyzing
chugging instabilities
LEWIS-11294 B71-10215 09
A study of high frequency nonlinear
combustion instability in baffled annular
liquid propellant rocket motors
NPO-11800 B71-10532 09
Analysis and computer programs to
calculate acoustic wave properties of
baffled chambers
LEWIS-11529 B72-10577 09
Polymer compositions suitable for use
in enriched oxygen atmospheres
MSC-14618 B74-10154 04

Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04

COMFORT

Portable low-frequency vibration
measuring and recording system
LANGLEY-10543 B71-10126 02
High mobility work station restraint
support
MSC-12419 B71-10301 07
Integral aircraft passenger seat
ARC-10799 B73-10495 05

COMMAND AND CONTROL

A frequency division multiplex technique
for transmitting commands
KSC-10521 B71-10169 02
Logistics hardware and services control
system
KSC-10819 B73-10418 09

COMMAND GUIDANCE

Remote control radioactive-waste
removal system uses modulated laser
transmitter
LANGLEY-10311 B71-10343 03

COMMAND SERVICE MODULES

Airlock caution and warning system
M-FS-21576 B72-10467 02

COMMERCIAL AIRCRAFT

Survey of aircraft electrical power
systems
LEWIS-11678 B72-10383 02
Integral aircraft passenger seat
ARC-10799 B73-10495 05

COMMUNITION

Improved thermal paint formulation
M-FS-14706 B71-10180 03
Plasma calcining of pigment particles for
thermal control coatings
M-FS-21267 B72-10320 04

COMMUNICATING

Fast Mars communication geometry
program
LANGLEY-10658 B71-10002 09
Computer-aided design of large-scale
integrated circuits - A concept
M-FS-20600 B71-10238 09

COMMUNICATION

Tone-activated, remote, alert
communication system
NPO-11132 B71-10307 02
A study of the power spectral density
of an FM signal
M-FS-21070 B72-10361 02
Motivation techniques for supervision
JSC-19187 B73-10448 05

COMMUNICATION CABLES

Concept for a distributed processor
computer
ERC-10271 B70-10481 02
Flat conductor cable survey
M-FS-22493 B73-10055 01

COMMUNICATION EQUIPMENT

Telemetry receiver
NPO-10746 B70-10008 02
Analysis and optimization of an
omnidirectional direction-finding system
M-FS-14346 B70-10112 02
Burst synchronization detection system
MSC-90317 B70-10159 02
Self-contained miniature electronics
transceiver provides voice communication
in hazardous environment
KSC-10164 B70-10335 01
Fabrication of electroacoustic RF
amplifiers
ERC-10266 B70-10460 01
Solid state variable time delay
ERC-10032 B70-10492 01

RC filter with low distributed capacitance
provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
Automatic reference level control for an
antenna pattern recording system
M-FS-20257 B71-10014 01
Radial rotating antenna-feed system
GSFC-11013 B71-10025 01
Microwave cryogenic thermal-noise
standards
NPO-11424 B71-10139 03
Study of nondestructive techniques for
redundancy verification
KSC-10661 B71-10258 02
Man-machine communication - A
transparent switchboard for computers
MSC-13746 B71-10263 02
A real-time statistical time-series
analyzer
MSC-12428 B71-10276 02
Isosceles detector provides maximum
resolution in expanded range
GSFC-10932 B71-10279 01
Enhancing efficiency of single,
large-aperture antennas
HQ-10597 B71-10287 01
Multifunction audio digitizer for
communications systems
MSC-13855 B71-10318 02
Communications system for zero-g
simulation tests in water
M-FS-21357 B71-10344 02
Broadband RF-distribution amplifier
NPO-11401 B72-10245 01
Low distortion automatic phase control
circuit
M-FS-21671 B72-10682 02
A closed, digital telephone system
JSC-13912 B73-10226 02
Eight-channel telephone telemetry
system
JSC-14452 B73-10320 05
Traffic control system and method
GSFC-10087 B74-10024 02
Variable-beamwidth antennas
GSFC-11760 B74-10041 02
Very high voltage latching relay
LEWIS-12265 B74-10079 01
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02

COMMUNICATION SATELLITES
A pseudo random-access synchronous
meteorological satellite system
GSFC-10895 B71-10220 02
Multiplexing technique for computer
communications via satellite channels
ARC-10879 B75-10133 09

COMMUNICATION THEORY
Telemetry receiver
NPO-10746 B70-10008 02
Communications link for SDS 900 series
computers
NPO-11161 B70-10163 02
Simplified method for measuring the
impedance of RF power sources - A
concept
NPO-10734 B70-10212 02

COMMUTATION
Commutating brushes tested in dc
motors in dry argon atmospheres
ARG-10243 B70-10045 01
Hall effect encoding of brushless dc
motors
GSFC-10789 B70-10188 01
High efficiency telemetry method
NPO-10388 B71-10371 02

Flexible format, computer accessed telemetry system
NPO-11358 B73-10290 02
Decimal digit generator for commutated data: A concept
ARC-10856 B74-10120 01

COMMUTATORS

Constant-voltage drive current-steering switch
NPO-10743 B70-10046 01
Brushless direct-current motors
NPO-11351 B70-10234 02
Constant current load matches impedances of electronic components
GSFC-10982 B70-10643 01
Brushless direct-current motor with stationary armature and field
XGS-05290 B70-10691 02
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Impulse commutating circuit with transformer to limit reapplied voltage
LEWIS-11849 B73-10004 01
Data multiplexer using a tree switch
NPO-11333 B73-10289 02

COMPACTING

Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
Determination of impact sensitivity of materials at high pressures
MSC-13700 B72-10216 07
New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08

COMPARATOR CIRCUITS

Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 B70-10515 01
Pattern recognition technique
NPO-11337 B71-10187 06
Topological solution of bilateral switching networks
ARC-10294 B72-10055 01
Gated compressor, distortionless signal limiter
NPO-11820 B73-10387 01
Synchronized frequency transposer
GSFC-11763 B74-10256 01

COMPARATORS

Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
Electronically controlled motor drive system has ultra-high reliability and long lifetime
GSFC-10065 B70-10346 02
Pulse-rate averaging circuit
GSFC-10718 B70-10370 01
Fail-safe numerical control
M-FS-12613 B70-10522 02
Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
Efficient digital comparison technique for logic circuits
M-FS-21080 B71-10218 02

On-line analysis of random vibrations
ARC-10154 B71-10284 09
Voltage regulator dissipates minimal power and functions as a voltage divider
B71-10367 01

Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
Voter comparator switch provides fail safe data communications system - A concept
MSC-13932 B71-10504 02
Improved nondispersive infrared analyzer
ARC-10802 B74-10243 03

COMPARISON

Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01
Comparative performance of twenty-three types of flat plate solar energy collectors
LEWIS-12511 B75-10189 03

COMPARTMENTS

Multiple-compartment venting program
MSC-19428 B75-10234 06

COMPASS (PROGRAMMING LANGUAGE)

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
Executive computer program for linking independent computer programs: ODINEX
LANGLEY-11324 B75-10194 09

COMPASSES

Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01

COMPATIBILITY

Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04
Rubber composition compatible with hydrazine
NPO-11440 B73-10019 04
Long-term material compatibility testing system
NPO-11776 B73-10385 04

COMPENSATORS

Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Simple technique extends life of angular-contact ball bearings
LEWIS-11117 B70-10535 07
Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02

Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06
Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04
Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09
Temperature compensation of digital inertial sensors
NPO-13044 B74-10106 02
Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
Torque control system
GSFC-11077 B75-10085 06

COMPLERS

Automated preventive maintenance program
GSFC-11408 B71-10500 09
Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09
Improved general-purpose namelist processor
LANGLEY-11834 B75-10263 09

COMPLEX SYSTEMS

Thermal scale modeling
M-FS-21268 B71-10432 03

COMPONENT RELIABILITY

Two terminal current limiter
NPO-11350 B70-10232 01
Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 B70-10649 03
High temperature circuit breaker
LEWIS-90265 B70-10721 01
Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09
Electronic switching circuit uses complementary non-linear components
AEC-10060 B72-10236 01
An improved method for obtaining a normalized junction temperature for semiconductors: A concept
JSC-14136 B73-10196 01

COMPONENTS

Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06

COMPOSITE MATERIALS

Testing filamentary composites
HQ-10268 B70-10004 04
Unidirectional composite stiffening
HQ-10266 B70-10054 04
A new low-expansion nonflammable printed circuit board
M-FS-20408 B70-10154 01
Self-lubricating fluorine shaft seal material
HQ-10112 B70-10222 04
Power semiconductor device with negative thermal feedback
HQ-10577 B70-10262 01
Polyimide polymers provide higher char yield for graphic structures
LEWIS-10860 B70-10330 04

SUBJECT INDEX

Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
Fabricating subscale components for application to full-scale parts
M-FS-20805 B70-10390 07
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 B70-10432 04
Improved reinforcement for openings in difficult fabrics
MSC-13554 B70-10489 08
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
New understanding of fiber composite materials
NPO-11605 B71-10161 04
Promising born/graphite/resin composites
M-FS-21126 B71-10217 04
Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
Granular two-phase insulation systems
NPO-12068 B71-10290 04
Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04

Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04
Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06
Foldable patterns form construction blocks
MSC-13860 B71-10523 08
Specimen for high-temperature tensile tests
ARC-10531 B72-10028 04
Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09
Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
Superior cryogenic insulation developed
M-FS-21560 B72-10187 04
Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
Graphite and boron-reinforced composite materials data summary
M-FS-21691 B72-10294 04
Inorganic glass ceramic slip rings
M-FS-20711 B72-10313 04
Fabrication of uniaxial filament-reinforced epoxy tubes for structural application
LANGLEY-10203 B72-10340 04
Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04
Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04
Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04
Phase-change materials handbook
M-FS-22064 B72-10464 04
Magnets with stabilized conductors
HQ-10727 B72-10465 03
Equations to assess the impact resistance of fiber composites
LEWIS-11486 B72-10503 04
Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 B73-10003 08
Fiber composite materials: A survey of fiber matrix interface mechanics
LEWIS-11924 B73-10007 04
Technique for the polymerization of monomers for PPQ/graphite fiber composites
LEWIS-11879 B73-10014 04
An inexpensive and effective method for calculating the strength of randomly reinforced fiber composites
LEWIS-11985 B73-10039 04
Residual stress effects on the impact resistance and strength of fiber composites
LEWIS-11984 B73-10063 04
Metal-metal reinforced laminar composites
LEWIS-11790 B73-10068 04

COMPOSITE MATERIALS

Production of circular polymer-glass fabric composites
M-FS-22125 B73-10069 04
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04
Preparation of prepreg graphite tape with insoluble polymer
JSC-14313 B73-10084 04
Lightweight graphite/polyimide panels
JSC-14375 B73-10121 04
A new concept for joining dissimilar composites
M-FS-24307 B73-10148 04
Computer program to compute buckling loads of simply supported anisotropic plates
LEWIS-11961 B73-10247 09
Graphite/polyimide laminates with near-zero thermal expansion
JSC-17662 B73-10254 04
Boron-epoxy tubular structure members
ARC-10737 B73-10265 08
Fabrication techniques for polybenzimidazole composites
ARC-10724 B73-10269 04
Design Guide for glass fiber reinforced metal pressure vessel
LEWIS-12042 B73-10311 08
Preparing thermoplastic aromatic polyimides
LANGLEY-11372 B73-10319 04
Articulated elastic-loop roving vehicles
M-FS-22691 B73-10326 06
Millimeter-wave antenna system
GSFC-10949 B73-10333 01
Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
Backflushing system rapidly cleans fluid filters
JSC-14273 B73-10405 06
Strain arrestor plate for mounting rigid insulating tiles
JSC-14182 B73-10465 06
Polyimide fiber-glass composite resists high temperatures
ARC-10782 B73-10505 04
Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04
Soft, thermally conductive material
LANGLEY-10850 B74-10132 04
Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08
Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04
Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 B74-10248 04
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04
Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
LEWIS-12366 B75-10066 04

COMPOSITE PROPELLANTS

Tailor making high performance graphite fiber reinforced PMR polyimides

LEWIS-12416 B75-10137 04

Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications

LEWIS-12514 B75-10151 06

Process for preparing polyimide adhesives

LANGLEY-11397 B75-10257 08

Lightweight orthotic braces

LANGLEY-11894 B75-10303 05

COMPOSITE PROPELLANTS

Flame zone of a composite propellant expanded by a laser source

LANGLEY-10660 B71-10335 03

COMPOSITE STRUCTURES

Unidirectional composite stiffening

HQ-10266 B70-10054 04

Design and evaluation of three-phase fibrous composite structures

HQ-10267 B70-10205 04

Improved epoxy resin for constructing cryogenic filament-wound pressure vessels

LEWIS-11261 B71-10261 04

Differential expansion fitting for cryogenic liquid tanks

LEWIS-11260 B71-10268 08

Thermally stable structural framework

ARC-10612 B72-10252 08

Composite casting demonstration

M-FS-21668 B72-10266 04

Boron aluminum composite structures

M-FS-21571 B72-10386 04

Adhesive coating eliminated in new honeycomb-core fabrication process

LANGLEY-11134 B73-10439 08

High strength, wire-reinforced electroformed structures

LEWIS-12087 B74-10018 08

COMPOSITE WRAPPING

Microorganism sample device

LANGLEY-10258 B71-10487 05

Large boron-epoxy filament-wound pressure vessels

NPO-11900 B73-10038 08

Filament winding technique produces strong lightweight oxygen tanks

M-FS-22470 B73-10082 08

COMPOSITION (PROPERTY)

Improved process of fabricating ferrite cores for magnetic logic circuits

LANGLEY-10036 B70-10104 04

Micrometeoroid velocity-and-trajectory analyzer

GSFC-11889 B74-10286 01

COMPOUNDS

Improved synthesis of intermetal compounds

HQ-10690 B72-10172 04

COMPRESSED AIR

Remote coupling of air lines

NUC-10225 B71-10101 07

Attitude controls for VTOL aircraft

XAC-8972 B71-10202 05

Plating by glass-bead peening

GSFC-11163 B71-10256 08

Fluidic pressure regulators

ARC-10474 B72-10162 06

Therapeutic hand-exercising device with cycling pressure valve

LANGLEY-11579 B74-10140 05

Ignition of sounding rocket motors with hand-pumped air

LANGLEY-11152 B74-10202 03

Removal of ice and marine growth from ship surfaces: A concept

NPO-13658 B75-10282 06

COMPRESSED GAS

Thermal conductivity of gaseous and liquid hydrogen

NUC-10558 B71-10105 04

Attitude controls for VTOL aircraft

XAC-8972 B71-10202 05

Compressed gas handbook

KSC-10662 B71-10272 03

Gas leak-detection system

NPO-11405 B72-10087 03

Two-stage coaxial gas compressor

ARC-10426 B72-10210 06

COMPRESSIBILITY

CSM programs SM RCS propellant quantity gaging systems program

MSC-17308 B71-10130 09

Evaluation of omniweave reinforcement for composite fabrication

M-FS-20946 B71-10245 04

New materials for fireplace logs

M-FS-21363 B71-10339 04

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines

LEWIS-10788 B71-10392 09

COMPRESSIBILITY EFFECTS

A sonic transducer to detect fluid leaks

KSC-10704 B72-10376 01

COMPRESSIBLE FLOW

Computer program for analysis of flow across a gas turbine seal

LEWIS-10975 B70-10317 09

Quick calculation method for fluid flow through duct systems

M-FS-15069 B70-10487 02

Computer program for natural gas flow through nozzles

LEWIS-11534 B72-10362 09

Sonic limitations and startup problems of heat pipes

AEC-10036 B72-10368 03

Computer program for compressible flow network analysis

LEWIS-11859 B73-10246 09

Computer program calculates quasi-one-dimensional flow across face seals and narrow slots

LEWIS-11996 B73-10248 09

Computer program for predicting symmetric jet mixing of compressible flow in jets

ARC-10730 B73-10263 09

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow

LANGLEY-11175 B74-10091 06

Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow

LEWIS-12178 B74-10129 09

Compressible flow computer program for gas film seals

LEWIS-12286 B75-10020 09

Laser velocimeter measurements of high-speed compressible flows

ARC-10781 B75-10141 03

COMPRESSIBLE FLUIDS

Simplified computation of compressible fluid flow parameters

KSC-10400 B70-10225 06

Dynamic response of viscous compressible fluids in rigid tubes

M-FS-20542 B71-10269 03

Compressed gas handbook

KSC-10662 B71-10272 03

COMPRESSING

Four-way, full-throttling valve concept

MSC-13437 B70-10165 07

Hydrodynamic squeeze-film bearings for gyroscopes

M-FS-20802 B70-10389 07

Synthesis of diamonds

M-FS-20698 B70-10513 08

Compression springs used for vibration isolation

NPO-11012 B70-10523 07

Preparation of thin polymer films for infrared reaction rate studies

MSC-15893 B70-10551 04

Simple, shock-free, quick-release connector - A concept

LEWIS-11178 B71-10146 07

Improved molecular sorbent trap for high-vacuum systems

ARC-10056 B71-10478 03

Weight simulator

ARC-10100 B72-10046 05

Development of a polyimide for use as a temperature and solvent resistant sealant

M-FS-21325 B72-10262 04

New compression molding process of thermosetting plastic compounds

LANGLEY-10782 B72-10356 08

A stagnation pressure probe for use in supersonic flow

LANGLEY-11139 B72-10543 06

Accurate thickness measurement of easily compressed materials

ARC-10551 B74-10111 04

Pressure application technique for high-temperature composite fabrication

LANGLEY-11601 B74-10141 08

COMPRESSION LOADS

Electrical resistance determination of actual contact area of cold welded metal joints

HQ-10472 B70-10084 04

Structural behavior of tapered inflated fabric cylinders under various loading conditions

MSC-15317 B71-10327 06

Method of determining thermal conductivity in multi-layer insulation systems

M-FS-20213 B72-10154 03

Apparatus for measuring static coefficient of friction under compressive loads

GSFC-11893 B75-10214 06

COMPRESSION TESTS

Effects of decontamination, sterilization, and thermal vacuum on polymeric products

NPO-11250 B70-10208 04

Deflection resistance indicator

M-FS-24010 B72-10401 04

Biaxial compression test technique

MSC-14883 B75-10319 08

COMPRESSION WAVES

Electrical instrument measures position and velocity of shock waves

ARC-10356 B71-10143 03

COMPRESSIVE STRENGTH

Lightweight, high-strength, reinforced plastic tube-framing die

LANGLEY-10126 B70-10273 04

SUBJECT INDEX

Open-celled polyurethane foam
KSC-10517 B70-10349 04

Filled polymers for bearings and seals
used in liquid hydrogen
LEWIS-10887 B70-10573 04

Concentric tubes cold-bonded by drawing
and internal expansion
ARG-90033 B71-10050 08

Axisymmetric and cylindrical isostable
structures - A concept
NPO-12049 B71-10446 06

Zero-leakage valves
ARC-10506 B72-10024 06

Graphite and boron-reinforced composite
materials data summary
M-FS-21691 B72-10294 04

Deflection resistance indicator
M-FS-24010 B72-10401 04

Strengthening lightweight concrete
AEC-10017 B72-10430 04

COMPRESSOR BLADES

Computer program for definition of
transonic axial-flow compressor blade
rows
LEWIS-12325 B75-10021 09

Tailor making high performance graphite
fiber reinforced PMR polyimides
LEWIS-12416 B75-10137 04

Design procedure for low-drag subsonic
airfoils
LANGLEY-11351 B75-10256 03

COMPRESSOR EFFICIENCY

Program for calculating total-efficiency
of specific-speed characteristics of
centrifugal compressors
LEWIS-12008 B73-10309 09

Computer program for predicting
off-design performance of centrifugal
compressors
LEWIS-12186 B74-10067 09

COMPRESSOR ROTORS

Freon 21 bearing lubrication and coolant
system
HQ-10302 B72-10651 06

Data summary and computer program
for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

COMPRESSORS

Novel valve for reciprocating
compressors - Concept
MSC-15060 B70-10160 07

Integrated turbine-compressor provides
air flow for cooling
HQ-10442 B70-10295 07

Fluid injection device for high-pressure
systems
MSC-15635 B70-10307 06

TFE coating extends life of flexible metal
compressor diaphragm
LEWIS-11113 B70-10609 07

Portable circuit-interruption indicator
KSC-10546 B71-10246 02

Dynamics of short pressure probes
LEWIS-11293 B71-10374 09

Split stator vane row for fans and
compressors
ARC-10288 B71-10528 06

High speed, self-acting, face-contact
shaft seal has low leakage and very low
wear
LEWIS-11598 B72-10114 07

Two-stage coaxial gas compressor
ARC-10426 B72-10210 06

FORTTRAN program for computing
coordinates of circular-arc, single and
tandem, turbine and compressor, blade
sections on a plane
LEWIS-11237 B72-10405 09

A new nickel-base wrought superalloy
for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04

COMPTON EFFECT

Circuit modification aids in atomic
particle discrimination
LEWIS-11155 B70-10689 01

A Compton scatter attenuation gamma
ray spectrometer
M-FS-21441 B72-10487 03

COMPUTATION

Simplified computation of compressible
fluid flow parameters
KSC-10400 B70-10225 06

Multiple focusing magnets used for
velocity selection of atoms
GSFC-10128 B70-10581 03

AUTOTEM - Automated geometry
meshing and heat conduction calculation
NUC-10241 B71-10039 09

Determination of gas volume trapped in
a closed fluid system
MSC-15685 B71-10094 06

Multi-dimensional real Fourier
transform
NPO-11648 B71-10133 09

Determination of radiation interchange
factors
MSC-13475 B71-10295 09

Computation of group table alphanumeric
display
LEWIS-11346 B71-10373 09

Computer program /TURBLE/ for
calculating velocities and streamlines in
turbomachines
LEWIS-10788 B71-10392 09

Steady temperature and density
distributions in a gas containing heat
sources
LEWIS-10905 B71-10398 09

Computer program optimizes design of
nuclear radiation shields
LEWIS-10998 B71-10400 09

Graphical method for analyzing digital
computer efficiency
ARC-10210 B71-10453 09

Carbon monoxide oxidation rates
computed for automobile thermal reactor
conditions
LEWIS-11638 B72-10137 04

COMPUTER COMPONENTS

Array multiplier
ERC-90076 B70-10047 02

Superconducting "transistor" acts as
high-speed switch
HQ-10547 B70-10082 01

Visual device to assist computer program
debugging
MSC-15833 B70-10308 09

Digital phase-modulation/multiplex
system
NPO-11338 B70-10355 02

Visual display panel functions as
computer input/output device
ERC-10223 B70-10476 01

Concept for a distributed processor
computer
ERC-10271 B70-10481 02

Ground computer test trap
KSC-10574 B70-10561 09

COMPUTER GRAPHICS

Nonvolatile read/write memory element
- A concept
GSFC-10994 B71-10347 01

Improved feedback shift register
NPO-10351 B72-10226 01

A fault-tolerant clock
JSC-12531 B73-10218 09

Inexpensive programmable computer
clock
LEWIS-11797 B73-10308 02

Electro-optical device for monitoring wire
size
LANGLEY-11358 B73-10321 02

Interface control scheme for computer
high-speed interface unit
M-FS-23083 B75-10036 01

Optical-noise suppression unit: A
concept
MSC-12640 B75-10315 03

COMPUTER DESIGN

Concept for a distributed processor
computer
ERC-10271 B70-10481 02

Concept for high speed computer
printer
KSC-10373 B70-10484 09

Circuit minimizes current drain caused
by neon indicator lamps
NUC-10157 B70-10534 01

Memory reduction through higher level
language hardware
M-FS-21128 B72-10350 09

Image data rate converter: A concept
NPO-11659 B73-10277 02

Modular digital computer system
design
M-FS-22935 B74-10034 09

Central control element expands
computer capability
M-FS-23216 B75-10103 02

Fast Fourier transformation computer
using fast counters
NPO-13110 B75-10175 02

Programmed asynchronous serial data
interrogation in a two-computer system
GSFC-11778 B75-10184 02

Real-time video correlator
M-FS-23200 B75-10265 02

Reliability computation from reliability
block diagrams
NPO-13304 B75-10276 07

Computer/computer interface
NPO-13428 B75-10326 02

COMPUTER GRAPHICS

PERT "C"
M-FS-20164 B70-10184 09

Program to produce horizontal
stereographic print maps from Nimbus
HRIR data
GSFC-11397 B72-10606 09

Integrated multi-path program analysis
and cost technique (IMPACT)
M-FS-21880 B72-10676 09

Digital video display system
NPO-11342 B73-10132 02

Numerical interactive controller
NPO-11497 B73-10294 02

Stereoscopic computer graphics display
system
M-FS-22322 B73-10526 09

Graphics shadowing analysis
M-FS-21406 B74-10040 09

Generalized curve fit and plotting
(GECAP) program
M-FS-22728 B74-10044 09

COMPUTER PROGRAMMING

Interactive graphical computer-aided design system
M-FS-23157 B75-10096 01
Simple computer method provides contours for radiological images
ARC-10940 B75-10146 09
Trimetric scale for drafting machines
MSC-15829 B75-10172 09
Small interactive image processing system (SMIPS)
GSFC-12079 B75-10295 09

COMPUTER PROGRAMMING

Quick calculation method for fluid flow through duct systems
M-FS-15069 B70-10487 02
COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02
Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 B70-10581 03
FORTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
Stored program concept for analog computers
M-FS-20874 B71-10240 09
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
Systems effectiveness evaluation program
HQ-10306 B72-10458 09
Analysis of microsize particulates
ARC-10647 B72-10565 04
Redundant data management system
M-FS-21831 B72-10589 09
System/360 Computer Assisted Network Scheduling (CANS) System
GSFC-10909 B72-10599 09
Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G
MSC-11653 B72-10721 09
Three bit mass spectral search program
NPO-11960 B72-10747 09
Extensive set of macros for structured programming in OS/360 assembly language (STRCMACS)
GSFC-11938 B75-10033 09

COMPUTER PROGRAMS

Telemetry receiver
NPO-10746 B70-10008 02
System availability management technique for reliability and maintainability analysis
KSC-10315 B70-10063 09
Automatic data generation scheme for finite-element method /FEDGE/
Computer program
NPO-11069 B70-10067 09
Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 B70-10094 04
Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09

A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
PERT "C"
M-FS-20164 B70-10184 09
Design procedure for improved active filters
M-FS-20445 B70-10238 02
Automated validation of a computer operating system
M-FS-14510 B70-10257 09
Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09
New model performance index for engineering design of control systems
HQ-10520 B70-10293 06
Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
Improved optical lens system
NPO-11311 B70-10354 03
Data from various sources provide standard single-level resonance parameters for uranium 233
NUC-10229 B70-10357 03
Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09
Fail-safe numerical control
M-FS-12613 B70-10522 02
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Design and evaluation of brushless electrical generators
LEWIS-10124 B70-10554 02
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
Information retrieval system
HQ-10426 B70-10556 09
Neutron ages computed from experimental activation data
LEWIS-10949 B70-10557 09
Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09
A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09
Expanded sun-look angle program
MSC-13176 B70-10602 09
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09
Computerized toroidal transformer design
NPO-11115 B70-10606 09
Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09
Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06

SUBJECT INDEX

Separation of two bodies in space
NPO-10663 B70-10625 09
Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
Global search algorithm for optimal control
ARC-10359 B70-10637 09
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09
Systems approach provides management control of complex programs
M-FS-20791 B70-10647 06
A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
Digital simulation program improved
M-FS-01504 B70-10705 09
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
Diagnostic capability added to digital events evaluator
KSC-10526 B71-10001 02
Fast Mars communication geometry program
LANGLEY-10658 B71-10002 09
Non-symmetrical two dimensional scattering program
NPO-11576 B71-10007 09
Symmetrical two dimensional scattering program
NPO-11578 B71-10008 09
Tracking antenna deformation program
GSFC-11191 B71-10017 09
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09
Radiation view factor program
M-FS-21075 B71-10106 09
Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09
Multi-dimensional real Fourier transform
NPO-11648 B71-10133 09

SUBJECT INDEX

Quick response targeting program
M-FS-15157 B71-10147 09

Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09

Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09

A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02

Accumulative weights program
M-FS-15066 B71-10181 09

ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09

Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05

Rotordynamic response analysis program
HQ-10579 B71-10211 09

Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09

Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09

DSIF station schedules
NPO-11547 B71-10243 09

Manpower forecast program
NPO-11551 B71-10244 09

Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04

Battery simulation program
NPO-11580 B71-10250 09

Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09

NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09

Determination of radiation interchange factors
MSC-13475 B71-10295 09

Spin vector control of a spinning space station
M-FS-21333 B71-10296 09

Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09

TCB operation supply inventory system /TCBSYS/
GSFC-11306 B71-10314 09

MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09

Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04

Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09

Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09

Dynamics of short pressure probes
LEWIS-11293 B71-10374 09

New procedure for determining minimum time orbit transfers
M-FS-14804 B71-10376 09

Computer program for discounted cash flow/rate of return evaluations
M-FS-19040 B71-10377 09

Study-simulation of space station dynamics
M-FS-21227 B71-10382 09

Metabolic balance analysis program
M-FS-21237 B71-10384 09

Thermal analysis system /TAS-1/
program
NPO-11849 B71-10386 09

Tolerance analysis program
MSC-17487 B71-10389 09

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09

Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09

Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09

Computer program optimizes design of nuclear radiation shields
LEWIS-10998 B71-10400 09

Microbial burden prediction model program
NPO-11709 B71-10401 09

Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09

Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09

Frame modal analysis
MSC-17562 B71-10414 09

Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09

Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09

FORTTRAN 4 digital program changer
MSC-17567 B71-10448 09

Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09

Optical design and analysis program
GSFC-11393 B71-10456 09

Radiation diffraction calculation program /DIFF2/
GSFC-11422 B71-10462 09

Cloud-free resolution element statistics program
GSFC-11494 B71-10463 09

Landing dynamics program for impact attenuating vehicles /LANDIT/
NPO-10840 B71-10472 09

Computer design of extension springs
M-FS-24073 B71-10473 09

Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03

Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09

Synthesis of dynamic systems
M-FS-21490 B71-10491 09

Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 B71-10492 09

A low-altitude satellite interaction study
GSFC-11384 B71-10499 09

Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09

Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09

COMPUTER PROGRAMS

Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09

Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09

Prediction of ducted fan performance
ARC-10615 B72-10064 09

Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
LANGLEY-11048 B72-10067 09

Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09

Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
LEWIS-11636 B72-10070 09

Program for determination of radiation interchange factors
MSC-17563 B72-10071 09

Wind trajectory tracing for air pollution studies (AIRPOL)
NPO-11892 B72-10072 09

Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09

Longitudinal friction forces in piping design
M-FS-13754 B72-10103 01

Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09

Selecting digital filters
M-FS-20933 B72-10156 01

Overlay board for control consoles
ARC-10007 B72-10191 02

Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09

Snap dynamics
M-FS-21531 B72-10265 09

Rapid analysis of electric propulsion missions
ARC-10430 B72-10299 09

Analysis of thermal stress and metal movement during welding
M-FS-20984 B72-10333 04

Acoustic spectral analysis and testing techniques
NPO-11554 B72-10341 03

FORTTRAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane
LEWIS-11237 B72-10405 09

Program to determine space vehicle response to wind turbulence
M-FS-21614 B72-10410 09

Variable boundary II heat conduction
LEWIS-10679 B72-10444 09

Systems effectiveness evaluation program
HQ-10306 B72-10458 09

Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09

COMPUTER PROGRAMS

SUBJECT INDEX

Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09

Geometrically nonlinear static and dynamic analysis of arbitrarily loaded shells of revolution
LANGLEY-11109 B72-10504 09

Analysis and computer programs to calculate acoustic wave properties of baffled chambers
LEWIS-11529 B72-10577 09

Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 B72-10579 05

Chemical kinetics computer program for static and flow reactions
LEWIS-11467 B72-10580 04

Computer method for identification of boiler transfer functions
LEWIS-11808 B72-10582 09

Computer programs for the design of liquid-to-liquid jet pumps
LEWIS-11679 B72-10584 09

Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09

Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
LEWIS-11635 B72-10586 09

Significance arithmetic experimental package (SIGPAC)
GSFC-11499 B72-10600 09

Study of high altitude plume impingement
M-FS-21414 B72-10601 09

Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06

Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09

Propulsion sizing program
MSC-14016 B72-10605 09

Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 B72-10606 09

Automatic computer subprogram selection from application-program libraries - ALTLIB
LANGLEY-11124 B72-10607 09

Two autowire versions for CDC-3200 and IBM-360
GSFC-11526 B72-10608 09

Computer program analyzes and monitors electrical power systems (POSIMO)
GSFC-11505 B72-10610 09

Spectral analysis of multiple time series
M-FS-18859 B72-10614 09

Vortex-lattice FORTRAN program for estimating subsonic aerodynamic characteristics of complex planforms
LANGLEY-11047 B72-10618 09

Source deck compression and update program (CAPS)
GSFC-11545 B72-10619 09

GPEDIT
GSFC-11308 B72-10620 09

Water impact loads
M-FS-21955 B72-10621 09

Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09

FORTMAN manpower account program
NPO-11973 B72-10623 09

Computer program to generate attitude error equations for a gimbaled platform
M-FS-21991 B72-10624 09

Program to reduce the size of structural matrices
MSC-17619 B72-10625 09

Computer program for afterheat temperature distribution for mobile nuclear power plant
LEWIS-11693 B72-10634 09

Vibrational transfer functions for complex structures
M-FS-20744 B72-10648 09

Program for creating an operating system generation cross reference index (SGINDEX)
GSFC-11612 B72-10650 09

Analytic procedures for determining dimensional redundancies in electronic devices
HQ-10709 B72-10656 09

Geometric field-line calculations
GSFC-11597 B72-10674 09

Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
GSFC-11523 B72-10675 09

Propellant feed systems transients
MSC-17848 B72-10677 06

Computer program for calculation of complex chemical equilibrium compositions
LEWIS-11714 B72-10718 09

Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06

Analysis of circuits including magnetic cores (MTRAC)
NPO-11494 B72-10724 02

Optimizing designs of two-level factorial experiments given partial prior information (NAMER)
LEWIS-11708 B72-10726 09

SINDA, Systems Improved Numerical Differencing Analyzer
MSC-13805 B72-10736 09

Aerotherm chemical equilibrium (ACE) computer program
LEWIS-11722 B72-10739 09

Design of microstrip components by computer
LANGLEY-11210 B72-10741 01

Final report on a study of low-density nozzle flows, with application to microthrust rockets
HQ-10761 B72-10748 06

Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06

FORTMAN read package
MSC-14161 B72-10750 09

FORTMAN program for generating a two-dimensional orthogonal mesh between two arbitrary boundaries
LEWIS-11863 B72-10753 09

N-body U and K matrix program
LEWIS-11438 B72-10012 09

Large boron-epoxy filament-wound pressure vessels
NPO-11900 B72-10038 08

A comprehensive program for textual concordances and statistics
JSC-17484 B73-10049 09

Automated Data Management Information System (ADMIS)
KSC-10619 B73-10053 09

Computer program for transient response of structural rings subjected to fragment impact
LEWIS-11926 B73-10064 09

Aerotherm charring materials ablation computer program
LEWIS-11854 B73-10065 09

Computer program for preliminary design analysis of axial-flow turbines
LEWIS-11815 B73-10066 09

Medical Information Management System (MIMS): An automated hospital information system
GSFC-11540 B73-10073 09

PPUAS--photopack unfolding and self-shielding program
NPO-13188 B73-10087 09

A general purpose maneuver turns computer program
NPO-13213 B73-10088 09

A linear circuit analysis program with stiff systems capability
LANGLEY-11184 B73-10091 09

Eigenvalue routine by Sturm sequence method
NPO-11805 B73-10114 09

Automated Shell Theory for Rotating Structures (ASTROS)
M-FS-21970 B73-10115 09

Ascent control analysis for S-II derivative launch vehicles, digital computer program
M-FS-24324 B73-10120 09

Computer-controlled vibration testing
NPO-11612 B73-10138 02

GREMEX update (Goddard research engineering management exercise)
GSFC-11512 B73-10162 09

Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds
LANGLEY-11250 B73-10183 06

Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds
LANGLEY-11249 B73-10184 06

Pressure drop and pumping power for fluid flow through round tubes
M-FS-24172 B73-10186 09

Computer program for the design of toroidal transformers
LEWIS-11878 B73-10214 09

Spectral Analysis Program (SAP)
JSC-14310 B73-10227 09

Computer program for calculation of thermodynamic and transport properties of complex chemical systems
LEWIS-11997 B73-10231 09

A computer program for calculating design and off-design performance for turbojet and turbofan engines
LEWIS-12010 B73-10232 09

Computer program to determine the irrotational nozzle admittance
LEWIS-12019 B73-10233 09

Method for predicting rotor free-wake positions and the resulting rotor blade airloads
LANGLEY-10674 B73-10239 06

SUBJECT INDEX

Computer program to determine roots of polynomials by ratio of successive derivatives

LEWIS-11809 B73-10244 09

A computer program for calculating design and off-design performance of two- and three-spool turbofans with as many as three nozzles

LEWIS-12011 B73-10245 09

Computer program for compressible flow network analysis

LEWIS-11859 B73-10246 09

Computer program to compute buckling loads of simply supported anisotropic plates

LEWIS-11961 B73-10247 09

Computer program calculates quasi-one-dimensional flow across face seals and narrow slots

LEWIS-11996 B73-10248 09

Computer program for predicting symmetric jet mixing of compressible flow in jets

ARC-10730 B73-10263 09

Node-recording method for stiffness matrix wavefront reduction in structural analysis

NPO-11620 B73-10296 09

Computer program for the prediction of reorientation flow dynamics

LEWIS-11816 B73-10307 09

Program for calculating total-efficiency of specific-speed characteristics of centrifugal compressors

LEWIS-12008 B73-10309 09

Characteristics of FORTRAN

LANGLEY-11177 B73-10322 09

Computer program to determine pressure distributions and forces on blunt bodies of revolution

LANGLEY-11197 B73-10362 09

Computer program for stress, vibration, and buckling characteristics of general shells of revolution

LANGLEY-11369 B73-10363 09

Logistics hardware and services control system

KSC-10819 B73-10418 09

Marshall system for aerospace simulation (MARSYS)

M-FS-22672 B73-10432 09

Dynamic nonlinear analysis of shells of revolution (DYNASOR II)

JSC-14496 B73-10443 09

Frequencies and modes for shells of revolution (FAMSOR)

JSC-14497 B73-10444 09

The static nonlinear analysis of shells of revolution (SNASOR II)

JSC-14495 B73-10445 09

Stiffness and mass matrices for shells of revolution (SAMMSOR II)

JSC-14494 B73-10446 09

Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow

LANGLEY-11305 B73-10470 06

Improved method for design of expansion-chamber mufflers with application to operational helicopter

LANGLEY-11548 B73-10471 03

Stereoscopic computer graphics display system

M-FS-22322 B73-10526 09

Design standards for low-profile flanges

M-FS-22708 B74-10033 09

Computer program for spacecraft-booster separation spring selection, set composition, and location determination

GSFC-11616 B74-10037 09

Graphics shadowing analysis

M-FS-21406 B74-10040 09

Marshall information retrieval and display system (MIRADS)

M-FS-22536 B74-10043 09

Generalized curve fit and plotting (GECAP) program

M-FS-22728 B74-10044 09

Measurement of temperature profiles in hot gases and flames

LEWIS-12055 B74-10060 03

Computer program for predicting off-design performance of centrifugal compressors

LEWIS-12186 B74-10067 09

Computer program for flexible rotor dynamics analysis

LEWIS-12153 B74-10084 09

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow

LANGLEY-11175 B74-10091 06

Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans

ARC-10833 B74-10113 09

Computer program for calculating water and steam properties

LEWIS-12206 B74-10123 09

Data summary and computer program for axial-flow pump rotor performance

LEWIS-11920 B74-10127 09

Computer program for calculating critical speeds of rotating shafts

LEWIS-11910 B74-10128 09

Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow

LEWIS-12178 B74-10129 09

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine

LEWIS-12129 B74-10130 09

Space Ultrareliable Modular Computer (SUMC) instruction simulator

M-FS-22697 B74-10145 09

Separation dynamics of S-II derivative launch vehicle

M-FS-24325 B74-10151 06

Eigenfunction solution of damped structural systems: DAMP

NPO-13480 B74-10169 09

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option

LANGLEY-11569 B74-10186 09

Model optimization using statistical estimation

M-FS-22873 B74-10189 09

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)

LANGLEY-11199 B74-10203 09

Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)

LANGLEY-11533 B74-10204 09

COMPUTER PROGRAMS

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4

LANGLEY-11209 B74-10205 09

Computer program for steamtube curvature analysis: Analytical method

LANGLEY-11535 B74-10206 09

Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)

LANGLEY-11581 B74-10207 09

Eigenvalue algorithm based on a combined Sturm sequence and inverse iteration technique (EASI)

NPO-13368 B74-10215 09

Calculation of aerodynamic characteristics of STOL aircraft

ARC-10882 B74-10221 09

Computerized logic design of digital circuits

M-FS-22401 B74-10225 09

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)

LANGLEY-11596 B74-10236 09

Thermoelastic analysis of solar cell arrays and their material properties

NPO-13458 B74-10301 03

View factor computer program (VIEW)

GSFC-11910 B75-10032 09

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG

M-FS-22838 B75-10093 09

Computer program for numerical analysis of stiffened shells of revolution

M-FS-23027 B75-10094 09

Program for analysis of nonlinear equilibrium and stability (PANES)

M-FS-23172 B75-10100 09

Computer program for analysis of vectorcardiograms (VECTAN II)

MSC-14386 B75-10106 09

Computer modeling of arc drivers

ARC-10955 B75-10130 09

RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity

LEWIS-12388 B75-10186 09

Computer program for calculating water and steam properties

LEWIS-12519 B75-10187 09

Computer program for calculating thermodynamic and transport properties of fluids

LEWIS-12520 B75-10188 09

Executive computer program for linking independent computer programs: ODINEX

LANGLEY-11324 B75-10194 09

Handbook for estimating toxic fuel hazards

M-FS-21114 B75-10198 04

Marshall vehicle-engineering simulation system (MARVES)

M-FS-21701 B75-10199 06

Automated statistical analysis program (ASAP)

LANGLEY-11125 B75-10217 02

Chemical equilibrium of ablation materials including condensed species

LANGLEY-11801 B75-10225 04

Multiple-compartment venting program

MSC-19428 B75-10234 06

Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)

MSC-14866 B75-10236 03

COMPUTER STORAGE DEVICES

SUBJECT INDEX

Computer program for the attenuation of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09
Improved axisymmetric potential flow computer program
LEWIS-12387 B75-10243 09
Optical design computer program: LENS II
GSFC-11951 B75-10250 03
Computer integration of hydrodynamics equations for heat pipes
GSFC-12009 B75-10252 09
Reliability computation from reliability block diagrams
NPO-13304 B75-10276 07
Computer system for library access
GSFC-11952 B75-10292 09
General optics evaluation program (GENOPTICS)
GSFC-12038 B75-10294 09
Static aeroelastic program
LANGLEY-11602 B75-10298 06
The Langley Research Center
NASA/PERT TIME III
LANGLEY-11887 B75-10302 09

COMPUTER STORAGE DEVICES
Improved solid state electron-charge-storage device
HQ-10152 B70-10074 01
High speed television camera system processes photographic film data for digital computer analysis
NPO-10745 B70-10282 02
Integrated circuit random-access memory decoder
ERC-10211 B70-10372 01
Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 B70-10447 05
Multiport semiconductor devices
ERC-10293 B70-10448 01
Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01
Concept for a distributed processor computer
ERC-10271 B70-10481 02
Concept for high speed computer printer
KSC-10373 B70-10484 09
Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09
Information retrieval system
HQ-10426 B70-10556 09
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01

Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01
A study of nitride devices for computer memory applications
M-FS-20971 B71-10350 03
Study-simulation of space station dynamics
M-FS-21227 B71-10382 09
Hybrid computer techniques for solving partial differential equations
M-FS-21386 B71-10424 09
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
Memory reduction through higher level language hardware
M-FS-21128 B72-10350 09
A visual-display and storage device
GSFC-10901 B72-10647 02
Optimal read/write memory system components
M-FS-22044 B72-10697 01
Braid read-only memory
NPO-11570 B73-10136 01
Tetrad bubble domain chip arrangement for multiplexing
M-FS-22296 B73-10202 02
Hologram recording tubes
M-FS-22590 B73-10330 03
Modular digital computer system design
M-FS-22935 B74-10034 09
High-speed fault-tolerant telemetry/computer interface
NPO-13139 B74-10296 02
One-dimensional multimode and multistate oscillator: A concept
HQ-10851 B75-10088 01
Page composer to translate binary electrical data to optical form
M-FS-22589 B75-10161 02
Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 B75-10195 01
Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 B75-10196 01
Bubble-domain circuit wafer evaluation coil set
LANGLEY-11728 B75-10197 01

COMPUTER SYSTEMS PROGRAMS
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
Manpower management information system /MIS/
M-FS-21477 B71-10431 09
Reliability analysis based on operational success criteria
ARC-10490 B72-10214 09
Optimization technique for problems with an inequality constraint
ARC-10522 B72-10222 09
FORTRAN read package
MSC-14161 B72-10750 09
Interactive graphical computer-aided design system
M-FS-23157 B75-10096 01
Remote file inquiry (RFI) system
KSC-10837 B75-10155 09

Programmed asynchronous serial data interrogation in a two-computer system
GSFC-11778 B75-10184 02
Improved general-purpose namelist processor
LANGLEY-11834 B75-10263 09
Small interactive image processing system (SMIPS)
GSFC-12079 B75-10295 09

COMPUTER TECHNIQUES
Memory reduction through higher level language hardware
M-FS-21128 B72-10350 09
High speed sequential decoder
ARC-10657 B72-10568 09
Program for creating an operating system generation cross reference index (SGINDEX)
GSFC-11612 B72-10650 09
Acoustical analysis system
GSFC-11087 B72-10751 02
A generalized approach to computer synthesis of digital holograms
M-FS-21973 B73-10101 09
Improved noise-adding radiometer for microwave receivers
NPO-11706 B73-10345 02
Computer system for monitoring radiorepirometry data
ARC-10784 B73-10494 05
Facility for testing solar cells
NPO-11761 B74-10099 02

COMPUTERIZED DESIGN
Computerized toroidal transformer design
NPO-11115 B70-10606 09
Man-machine interactive system simplifies computer-aided circuit design
LANGLEY-10711 B70-10660 09
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09
Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
Frame modal analysis
MSC-17562 B71-10414 09
Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09
Computer design of extension springs
M-FS-24073 B71-10473 09
Computer programs for the design of liquid-to-liquid jet pumps
LEWIS-11679 B72-10584 09
Two autowire versions for CDC-3200 and IBM-360
GSFC-11526 B72-10608 09
Computer program for calculation of complex chemical equilibrium compositions
LEWIS-11714 B72-10718 09
Design of microstrip components by computer
LANGLEY-11210 B72-10741 01
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
Computerized logic design of digital circuits
M-FS-22401 B74-10225 09
Interactive graphical computer-aided design system
M-FS-23157 B75-10096 01

- Trimetric scale for drafting machines
MSC-15829 B75-10172 09
- Improved axisymmetric potential flow
computer program
LEWIS-12387 B75-10243 09
- Computer integration of hydrodynamics
equations for heat pipes
GSFC-12009 B75-10252 09
- General optics evaluation program
(GENOPTICS)
GSFC-12038 B75-10294 09
- COMPUTERIZED SIMULATION**
- The use of the chatter mode in
self-adaptive systems
HQ-10159 B70-10274 06
- Fast Mars communication geometry
program
LANGLEY-10658 B71-10002 09
- Quick response targeting program
M-FS-15157 B71-10147 09
- Microbial burden prediction model
program
NPO-11709 B71-10401 09
- Hybrid computer techniques for solving
partial differential equations
M-FS-21386 B71-10424 09
- Urban air pollution dispersion model
AEC-10004 B72-10003 03
- Adaptive position control loop
ARC-10255 B72-10052 02
- Main tank injection pressurization
program
LEWIS-11368 B72-10069 09
- GREMEX update (Goddard research
engineering management exercise)
GSFC-11512 B73-10162 09
- Marshall system for aerospace simulation
(MARSYAS)
M-FS-22672 B73-10432 09
- Antiskid braking system
M-FS-22807 B74-10146 06
- Computer program for the attenuation
of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09
- COMPUTERS**
- Self testing and repairing computer - A
concept
NPO-10567 B70-10452 09
- Concept for high speed computer
printer
KSC-10373 B70-10484 09
- Disc pack cleaning table saves computer
time
LANGLEY-10590 B70-10532 09
- Economical printed circuit front panel for
computer use
KSC-10573 B70-10560 01
- Performance evaluation system for
inertial navigation equipment
MSC-13542 B71-10087 02
- Hybrid redundancy system for improving
reliability - A concept
NPO-11546 B71-10132 01
- Pattern recognition technique
NPO-11337 B71-10187 06
- Man-machine communication - A
transparent switchboard for computers
MSC-13746 B71-10263 02
- Fast carry accumulator design
M-FS-20902 B71-10274 01
- On-line analysis of random vibrations
ARC-10154 B71-10284 09
- Low cost, logarithmic mass flow
computer
LEWIS-11001 B71-10407 06
- Eye point-of-regard system
ARC-10360 B71-10476 05
- Voter comparator switch provides fail
safe data communications system - A
concept
MSC-13932 B71-10504 02
- Techniques for improving reliability of
computers
M-FS-21326 B72-10109 02
- Flexible desk top computers using Large
Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
- Video information system
M-FS-21711 B72-10267 09
- Electronic circuit detects left ventricular
ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
- Space Ultrareliable Modular Computer
(SUMC) instruction simulator
M-FS-22697 B74-10145 09
- Multiplexing technique for computer
communications via satellite channels
ARC-10879 B75-10133 09
- CONCENTRATION (COMPOSITION)**
- Colorimetric detection of ethylene glycol
vapor
MSC-13222 B70-10031 03
- Solubility of non-polar gases in
electrolyte solutions
LEWIS-11052 B70-10114 04
- Suppression of zinc dendrites in zinc
electrode power cells
HQ-10550 B70-10434 02
- Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
- Salt stabilizer for preventing chlorine
depletion and increasing shelf-life of potable
water - A concept
MSC-17153 B71-10097 04
- Computer-controlled mass spectrometer
for on-line gas analysis
NPO-11427 B71-10191 03
- Laser-excited fluorescence for measuring
atmospheric pollution
NPO-13231 B75-10275 02
- CONCENTRATORS**
- Conical electromagnetic radiation flux
concentrator
M-FS-21613 B72-10147 03
- Carbon dioxide concentrator
ARC-10245 B72-10194 05
- Aircrew oxygen system
ARC-10247 B72-10195 05
- Economical solar-heating or cooling
system with new solar-energy
concentrators
NPO-13497 B75-10182 03
- CONCENTRIC CYLINDERS**
- Concentric tubes cold-bonded by drawing
and internal expansion
ARG-90033 B71-10050 08
- CONCENTRICITY**
- Drilled ball bearings - An approach to
extending bearing fatigue life at high
speeds
LEWIS-10856 B70-10468 07
- Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06
- CONCRETES**
- Self-forming shim or gasket for mounting
heavy equipment
KSC-10504 B70-10289 07
- Effect of size on cracking of materials
NPO-11602 B71-10158 04
- New materials for fireplace logs
M-FS-21363 B71-10339 04
- Strengthening lightweight concrete
AEC-10017 B72-10430 04
- CONDENSATES**
- Condensate-removal device for heat
exchangers
JSC-14143 B73-10429 06
- Heat pipe with hot gas reservoir
ARC-10847 B74-10216 03
- CONDENSATION**
- Feedback control of variable conductance
heat pipes
ARC-10460 B72-10169 03
- Liquid methane gelled with methanol and
water reduces rate of nitrogen absorption
LEWIS-11574 B72-10330 06
- Thermal-powered reciprocating pump
NPO-11417 B72-10723 06
- CONDENSERS**
- Particle detection by a light-scattering
technique
ARC-10384 B72-10160 03
- CONDENSERS (LIQUIFIERS)**
- Water-filled heat pipe useful at moderate
temperatures
M-FS-20543 B70-10106 03
- Performance map of a heat pipe charged
with ammonia
NPO-11454 B70-10726 03
- Concentric tubes cold-bonded by drawing
and internal expansion
ARG-90033 B71-10050 08
- Literature review and experimental
investigation of heat pipes
M-FS-21074 B71-10353 03
- Improved molecular sorbent trap for
high-vacuum systems
ARC-10056 B71-10478 03
- An electrohydrodynamic heat pipe
ARC-10601 B72-10251 03
- Condensate-removal device for heat
exchangers
JSC-14143 B73-10429 06
- CONDENSING**
- Fuse and switch functions combined
within a single housing
HQ-10497 B70-10003 01
- Radiant heating concept efficient for
light-transmitting windows
M-FS-20630 B70-10324 03
- Evaluation of polymeric products for use
in thermal-vacuum environment
NPO-11288 B70-10612 04
- Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
- Coatings from copolymers of
tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04
- Insulation assembly uses cryopumping to
reduce heat transfer in cryogenic liquid
line
KSC-10518 B71-10364 03
- Promotion of dropwise condensation of
ethyl alcohol, methyl alcohol, and acetone
by polytetrafluoroethylene
LANGLEY-10940 B72-10115 04
- Closed-cycle power supply for fluidic
control systems
ARC-10480 B72-10163 06
- Restartable heat pipe
ARC-10198 B72-10188 03
- CONDUCTION**
- Vibrating ribbon bolometer: A concept
XAC-10768 B72-10170 03
- CONDUCTION BANDS**
- A study of nitride devices for computer
memory applications
M-FS-20971 B71-10350 03

- Efficiency increased in new solar cell:
A Concept
LANGLEY-11174 B74-10090 01
- CONDUCTION ELECTRONS**
Ohmic diode
HQ-10534 B70-10200 01
- CONDUCTIVE HEAT TRANSFER**
Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 B71-10109 06
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03
Thermal scale modeling
M-FS-21268 B71-10432 03
Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 B72-10406 04
Fabrication of cooled, graphite-lined structures
LEWIS-11741 B72-10593 08
Thermal contact resistance in a non-ideal joint
M-FS-21775 B73-10105 03
Compact laser through improved heat conformance
NPO-13147 B75-10176 03
- CONDUCTIVITY METERS**
Nondestructive measurement of capillary tube internal diameter
LANGLEY-11647 B75-10156 02
- CONDUCTORS**
Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 B70-10298 01
Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05
Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 B71-10168 08
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05
A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01
Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08
High voltage protection network
ARC-10197 B72-10119 02
Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 B75-10195 01
- CONES**
Disc pack cleaning table saves computer time
LANGLEY-10590 B70-10532 09
- Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07
Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
Conical electromagnetic radiation flux concentrator
M-FS-21613 B72-10147 03
High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
- CONFERENCES**
Proceedings of the Third Southeastern Seminar on Thermal Sciences
M-FS-20627 B70-10135 03
Silicon solar cells improved by lithium doping
NPO-11390 B70-10585 04
Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 B70-10649 03
- CONFIDENCE LIMITS**
Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
Performance of silicon solar cell assemblies
NPO-11847 B72-10186 01
Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06
- CONFIGURATION MANAGEMENT**
MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
- CONFORMAL MAPPING**
Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06
- CONICAL BODIES**
Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
An improvement in blackbody cavity design
LANGLEY-10292 B70-10711 03
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
Improved reversible coulometer cell
SAN-10051 B71-10176 02
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
Rising-plate rheometer
ARC-10524 B72-10026 03
Water impact loads
M-FS-21955 B72-10621 09
- CONICAL NOZZLES**
Air-atomizing splash-cone fuel nozzle reduces pollutant emissions from turbojet engines
LEWIS-11918 B73-10200 06
- CONICAL SCANNING**
Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
High-gain antenna with singly-curved reflector
NPO-11361 B73-10291 02
- Multiple-reflection conical microwave antenna
NPO-11661 B73-10299 02
- CONICAL SHELLS**
Improved plasma accelerator
ARC-10109 B71-10454 03
- CONICS**
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
- CONJUGATES**
Beam squint correction for a diplex, retrodirective phased array
GSFC-11023 B71-10444 02
- CONNECTORS**
Portable vibration exciter
KSC-10069 B70-10339 07
Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07
Special wrench for B-nuts reduces torque stress in tubing
MSC-15885 B70-10550 07
Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 B71-10044 06
Hobel stripper for shielded and unshielded flat conductor cable
M-FS-20120 B71-10060 08
Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Hot tap thermowell installation
MSC-12427 B71-10302 07
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
Eye point-of-regard system
ARC-10360 B71-10476 05
Tool expedites installation of BNC connectors
ARC-10327 B71-10480 07
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
Heart catheter cable and connector
ARC-10406 B72-10200 05
Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06

- Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01
- Artificial limb connection
KSC-10833 B74-10183 05
- Fluorescent color coding of power receptacles
MSC-19504 B75-10109 01
- Increasing terminal strip efficiency at cryogenic temperatures
M-FS-23234 B75-10266 03
- CONSCIOUSNESS**
Electronic sleep analyzer
MSC-13282 B70-10110 02
- CONSERVATION**
Systems approach provides management control of complex programs
M-FS-20791 B74-10647 06
- Systems management techniques and problems
M-FS-21401 B71-10361 01
- CONSOLES**
Slide checkout console
MSC-12318 B70-10290 02
- Visual device to assist computer program debugging
MSC-15833 B70-10308 09
- Human performance measuring device
LANGLEY-10679 B70-10619 05
- CONSTANTAN**
Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
- Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
- Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08
- Thermocouple tape
LEWIS-11072 B72-10515 04
- CONSTANTS**
Prediction of windage power loss in alternators
LEWIS-10939 B71-10074 06
- Effect of size on cracking of materials
NPO-11602 B71-10158 04
- Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
- Optimization technique for problems with an inequality constraint
ARC-10522 B72-10222 09
- CONSTRAINTS**
PERT "C"
M-FS-20164 B70-10184 09
- Multimode ergometer system
M-FS-21044 B71-10107 05
- Tilt table for ergometers and other biomedical devices
M-FS-21010 B71-10241 05
- Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
- High mobility work station restraint support
MSC-12419 B71-10301 07
- Low-friction ball-and-socket
NPO-11348 B72-10081 08
- Optimization technique for problems with an inequality constraint
ARC-10522 B72-10222 09
- Restraint and locomotion aid
ARC-10153 B72-10558 06
- CONSTRUCTIONS**
Compact fluid-flow restrictor
MSC-15803 B70-10679 07
- CONSTRUCTION**
Universal router concept
M-FS-20756 B70-10313 07
- Pipe installation technique avoids disturbing work areas
MSC-15581 B71-10093 06
- Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
- Foldable patterns form construction blocks
MSC-13860 B71-10523 08
- Bolt installation tool for tightening large nuts and bolts
NPO-13059 B74-10164 07
- Expandable space frames
ERC-10365 B74-10252 06
- New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07
- Solar power roof shingle
LEWIS-12587 B75-10289 01
- Low-cost hot-air solar collector
M-FS-23272 B75-10301 08
- CONSTRUCTION MATERIALS**
Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
- Strengthening lightweight concrete
AEC-10017 B72-10430 04
- Flexible shielding system for radiation protection
LRL-10028 B72-10500 03
- Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06
- Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06
- CONSUMERS**
Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- CONSUMPTION**
TCB operation supply inventory system /TCBSYS/
GSFC-11306 B71-10314 09
- Metabolic balance analysis program
M-FS-21237 B71-10384 09
- CONTACT LENSES**
Contact-eutectic-lens fabrication technique
M-FS-23275 B75-10308 04
- CONTACT RESISTANCE**
Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
- Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
- Durability tester for FCC connectors
M-FS-20128 B71-10418 08
- Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
- Improved photovoltaic devices, using transparent contacts
LANGLEY-11761 B75-10220 01
- CONTAINERS**
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
- Tool carrier
M-FS-21469 B72-10319 07
- CONTAMINANTS**
Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
- Progress in research on chlorate candle technology
MSC-13409 B70-10258 04
- Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
- Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07
- Urban air pollution dispersion model
AEC-10004 B72-10003 03
- Wind trajectory tracing for air pollution studies (AIRPOL)
NPO-11892 B72-10072 09
- Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07
- Manufacturing contamination prevention handbook
M-FS-19113 B72-10394 08
- Microbiological surface sampling cart
LANGLEY-11069 B72-10395 05
- Purification of contaminated water by filtration through porous glass
ARC-10655 B72-10412 04
- Improved method for reclaiming vacuum diffusion pump oil
LEWIS-11647 B72-10511 04
- Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04
- Estimating sorber capacity for multiple contaminants
LANGLEY-11056 B73-10424 04
- CONTAMINATION**
Molecular sieves control contamination and insulate in thermal regenerators - A concept
GSFC-10910 B70-10424 07
- High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08
- Elimination of gases and contamination from water
KSC-10502 B70-10456 05
- Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03
- Combination syringe provides air-free blood samples
MSC-12320 B70-10545 05
- High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07
- Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
- Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

- Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07
Dropouts in magnetic tape recording and reproduction
NPO-11519 B71-10160 03
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07
Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
Modifications to a vacuum assisted filtering device to minimize contamination
MSC-13733 B71-10277 04
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
Exothermic brazing units
M-FS-21435 B71-10467 08
Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 B71-10475 05
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
Study of in-situ degradation of thermal control surfaces
M-FS-20892 B72-10336 04
Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03
Manufacturing contamination prevention handbook
M-FS-19113 B72-10394 08
Microbiological surface sampling cart
LANGLEY-11069 B72-10395 05
Radiological control manual
M-FS-22092 B72-10460 03
Efficient baffle prevents oil backstreaming in diffusion pumps
LRL-10025 B72-10475 07
Bacterial contamination monitor
GSFC-10879 B73-10222 05
Chemical pretreatment for the distillation of urine
JSC-14225 B73-10224 04
Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 B75-10170 05
- CONTINUITY**
Automatic data generation scheme for finite-element method /FEDGE/
Computer program
NPO-11069 B70-10067 09
Apparatus tests flexural durability of FCC
M-FS-20113 B71-10458 08
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
- CONTINUOUS WAVE LASERS**
High-power CW laser using hydrogen-fluorine reaction
NPO-13623 B75-10183 03
Formation of internally-confined semiconductor lasers
LANGLEY-11770 B75-10299 08
- CONTINUOUS WAVE RADAR**
Junction range finder
KSC-10108 B73-10191 02
- CONTINUUM FLOW**
Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03
- CONTOURS**
A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02
Solar cell power scanner
LEWIS-11280 B71-10223 02
Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
Measuring internal dimensions of small transparent objects
LANGLEY-10712 B71-10505 08
Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03
Improved discrimination in photographic density contouring
JSC-12588 B73-10441 03
Simple computer method provides contours for radiological images
ARC-10940 B75-10146 09
- CONTRACT MANAGEMENT**
FORTRAN manpower account program
NPO-11973 B72-10623 09
GREMEX update (Goddard research engineering management exercise)
GSFC-11512 B73-10162 09
- CONTRACTION**
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
A monostrain test apparatus
M-FS-24221 B72-10679 06
- CONTRAST**
Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
- CONTROL**
New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02
Theory and application of Kalman filtering
M-FS-20491 B70-10309 06
Chebyshev minimax control theory
M-FS-20639 B70-10315 03
Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
- CONTROL BOARDS**
Human performance measuring device
LANGLEY-10679 B70-10619 05
Multimode ergometer system
M-FS-21044 B71-10107 05
Automatic transmission line monitor
KSC-10385 B71-10288 02
Overlay board for control consoles
ARC-10007 B72-10191 02
Rechargeable, silver-zinc battery conditioner/monitor unit and state-of-charge indicator
M-FS-22835 B73-10486 02
- CONTROL DATA (COMPUTERS)**
Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
- FORTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- CONTROL EQUIPMENT**
Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
Directional control of radiant heat
LEWIS-90237 B70-10321 03
Thumb-actuated control device
ARC-10019 B70-10407 01
Control system for an artificial heart
LEWIS-11057 B70-10469 05
Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
Easy manual operation of overhead garage doors - A concept
KSC-10555 B70-10543 07
Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01
A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09
Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Controlled droplet spray generator
LEWIS-11193 B70-10652 07
Compact fluid-flow restrictor
MSC-15803 B70-10679 07
Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05
Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
Fast carry accumulator design
M-FS-20902 B71-10274 01
On-line analysis of random vibrations
ARC-10154 B71-10284 09
Scale factor gage for fiber optics inspection device
MSC-17361 B71-10496 07
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09
Airflow distribution control for improved turbine engine performance
LEWIS-11593 B72-10178 07
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07
Airlock caution and warning system
M-FS-21576 B72-10467 02
Neutron radiographic viewing system
M-FS-22024 B72-10468 02

- Automatic air flow control in air conditioning ducts
GSFC-11445 B72-10490 06
- A rapid, precise, reciprocating-movement color filter system
GSFC-11255 B72-10497 07
- Patient's breath controls comfort devices
LANGLEY-11138 B72-10533 05
- Automatic quadrature control and measuring system
M-FS-21660 B73-10127 02
- Fail-safe bidirectional valve driver
NPO-11958 B73-10450 07
- Variable-frequency inverter controls torque, speed, and braking in ac induction motors
M-FS-22088 B73-10525 02
- CONTROL STABILITY**
- New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02
- The determination of stability domains for nonlinear dynamical systems
M-FS-14832 B70-10539 03
- Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
- A cable stabilizer for outdoor elevators
KSC-10513 B72-10283 07
- CONTROL SURFACES**
- Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
- CONTROL THEORY**
- Adaptive position control loop
ARC-10255 B72-10052 02
- Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
- CONTROL UNITS (COMPUTERS)**
- Multiport semiconductor devices
ERC-10293 B70-10448 01
- Interface control scheme for computer high-speed interface unit
M-FS-23083 B75-10036 01
- Buffer control unit for computer communications
ARC-10870 B75-10059 02
- CONTROL VALVES**
- Concept for a gas operated actuator
NPO-11340 B70-10516 07
- Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
- Pilot-boost control valve
M-FS-20635 B70-10558 07
- Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
- Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
- Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
- Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
- Proportional pulsed pilot valve
ARC-10228 B71-10468 07
- Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
- Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
- Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05
- Combination throttle and shutoff valve
M-FS-21513 B72-10287 07
- Ball detent mechanism
M-FS-21735 B72-10470 07
- Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
- Shutoff and throttling valve
NPO-11951 B74-10105 07
- Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06
- CONTROLLED ATMOSPHERES**
- Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
- Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
- Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
- Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
- Reusable anaerobic system for microbiological studies - A concept
MSC-13920 B71-10495 05
- Real-time pair-feeding of animals
ARC-10302 B72-10298 05
- Artificial atmosphere control system
M-FS-22159 B73-10089 05
- Autoignition test cell with flexible atmosphere control
KSC-10198 B73-10113 04
- Spacecraft oxygen recovery system
ARC-10868 B74-10220 05
- Environmental control and waste management system design concept
LANGLEY-11588 B74-10235 06
- Ultrastructural alteration of mouse lung by prolonged exposure to mixtures of helium and oxygen
ARC-10929 B75-10061 05
- Oxygen cocoon for patients under intensive care
MSC-12663 B75-10079 05
- CONTROLLERS**
- Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
- Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03
- Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
- Concept for a distributed processor computer
ERC-10271 B70-10481 02
- Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02
- Logic controlled solid state switchgear
LEWIS-12044 B73-10408 02
- Solid-state controller
JSC-12394 B73-10466 06
- Versatile, analog-to-digital, power-regulator controller
NPO-13178 B73-10467 02
- Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
- CONVECTION**
- Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
- Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
- Evaluation of jet engine noise
M-FS-21416 B72-10263 03
- Composite casting demonstration
M-FS-21668 B72-10266 04
- Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- CONVECTIVE HEAT TRANSFER**
- Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
- A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
- Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
- The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 B71-10109 06
- Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09
- Regenerative cooling design and analysis computer program
LEWIS-12110 B75-10015 09
- Electrical gas heater with large flow range capability
LEWIS-12361 B75-10024 03
- CONVERGENCE**
- Combined effects of a converging beam of light and mirror misalignment in Michelson interferometry
ARC-10889 B74-10246 03
- CONVERGENT-DIVERGENT NOZZLES**
- Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
- CONVERSION TABLES**
- Design parameters for toroidal and bobbin magnetics
NPO-13441 B73-10459 01
- CONVERTERS**
- Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
- Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
- Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
- Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
- Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
HQ-10844 B75-10087 03
- CONVEYORS**
- Ferrofluid separator for nonferrous scrap separation
LANGLEY-11523 B73-10463 07
- CONVOLUTION INTEGRALS**
- Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
- COOLANTS**
- Discharge coefficients for thick-plate orifices
LEWIS-11067 B70-10062 06

Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03
Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04
Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09
Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09
Gettering capsule for removing oxygen from liquid lithium systems
LEWIS-11509 B73-10002 04

COOLING

Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 B70-10146 04
Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
M-FS-18790 B70-10213 04
Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03
Torch kit for welding in difficult areas
MSC-15704 B71-10070 08
Refrigerated cutting tools improve machining of superalloys
LANGLEY-10488 B71-10076 08
Multimode ergometer system
M-FS-21044 B71-10107 05
Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
Durable cathodes for high-power inert-gas arcs
LEWIS-11162 B71-10264 03
Radial heat flux transformer
NPO-10828 B71-10311 03

Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04
A practical solar energy heating and cooling system
M-FS-22563 B73-10156 05
Investigations of multiple jets in a crossflow
LEWIS-12102 B75-10149 03
Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
Compact laser through improved heat conductance
NPO-13147 B75-10176 03

COOLING SYSTEMS

Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
Gas turbine combustor insensitive to compressor outlet distortion
LEWIS-10286 B70-10312 07
Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
NUC-10227 B70-10356 03
The water-cryogen heat exchanger
NUC-11029 B70-10591 03
High intensity heat-pulse source operates without cooling system
ARC-10178 B70-10694 03
High density electronic packaging module with improved cooling assembly
MSC-13639 B71-10088 01
High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07
Cast segment evaluation
M-FS-21354 B71-10363 08
Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
Airflow distribution control for improved turbine engine performance
LEWIS-11593 B72-10178 07
Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
ARC-10560 B72-10278 03
A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
Turbopump thermodynamic cooling
M-FS-21597 B72-10408 06

Solar powered absorption cycle heat pump using phase change materials for energy storage
M-FS-21927 B72-10615 06
Fill and vent quick disconnect
M-FS-21822 B72-10645 07
Freon 21 bearing lubrication and coolant system
HQ-10302 B72-10651 06
Improved thermal isolation for superconducting magnet systems
NPO-11875 B74-10158 02
Electrostatically controlled heat shutter
NPO-11942 B74-10161 03
Metallized polymeric foam material
ARC-10860 B74-10218 04
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
Self-regenerating desiccant system
M-FS-23057 B74-10266 07
A method for measuring cooling air flow in base coolant passages of rotating turbine blades
LEWIS-12433 B75-10017 03
Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02

COORDINATE TRANSFORMATIONS

Separation of two bodies in space
NPO-10663 B70-10625 09

COORDINATES

Device for printing alphanumeric listings and digital data plots
LEWIS-10954 B70-10002 02
Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
NPO-11069 B70-10067 09
Analysis and optimization of an omnidirectional direction-finding system
M-FS-14346 B70-10112 02
Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
Psychrometric chart for physiological research
ARC-10394 B71-10470 03
Indefinite integrals of products of some exponential and trigonometric functions
LEWIS-11493 B72-10225 09

COORDINATION

High-speed fault-tolerant telemetry/computer interface
NPO-13139 B74-10296 02
Executive computer program for linking independent computer programs: ODINEX
LANGLEY-11324 B75-10194 09

COORDINATION POLYMERS

Technique for increasing yield of trifluoroni-trosomethane-tetrafluorone copolymer
ARC-10566 B72-10418 04

COPLANARITY

Coplanar interconnection module
ERC-10237 B70-10378 01
Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03

COPOLYMERIZATION

Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 B70-10334 04

- Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 870-10453 04
- Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 871-10154 04
- Polyelectrolytes with high charge density
NPO-11918 874-10159 04
- COPOLYMERS**
Polymerization of perfluorobutadiene
NPO-10863 870-10131 04
- Ultraviolet and thermally stable polymer compositions
ARC-10592 872-10709 04
- Liquid ethylene-propylene copolymers
NPO-13555 875-10207 04
- COPPER**
Economical weatherproof helical antenna
XKS-08485 870-10016 01
- Thermoelectric radiometer
ARC-10138 870-10056 02
- High-field superconducting nested coil magnet
ARG-10060 870-10061 03
- A stabilized low-frequency alternating-current electric arc
LEWIS-10442 870-10065 01
- Superconducting "transistor" acts as high-speed switch
HQ-10547 870-10082 01
- Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept
NPO-10755 870-10090 07
- Salvaging surface-damaged aluminum castings
M-FS-18789 870-10120 08
- Butt welder for fine gage wire
LANGLEY-10103 870-10136 08
- High energy density electrochemical cell
LEWIS-10969 870-10151 01
- A new low-expansion nonflammable printed circuit board
M-FS-20408 870-10154 01
- Effects of high pressure hydrogen on metals
M-FS-18612 870-10162 04
- Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 870-10177 04
- Cryogenic thermocouple calibration tables
NUC-10551 870-10197 03
- Controlled etching of printed-circuit boards
XGS-06306 870-10327 04
- Solid state bistable power switch
ERC-10290 870-10383 01
- Molecular sieves control contamination and insulate in thermal regenerators - A concept
GSFC-10910 870-10424 07
- Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10256 870-10444 04
- Bistable fluidic valve is electrically switched
NPO-10416 870-10517 07
- Strain gage installation manual
M-FS-18822 870-10715 06
- Improved source of infrared radiation for spectroscopy
M-FS-20613 871-10031 03
- Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 871-10033 01
- Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 871-10046 03
- Torch kit for welding in difficult areas
MSC-15704 871-10070 08
- Microwave cryogenic thermal-noise standards
NPO-11424 871-10139 03
- Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 871-10168 08
- Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 871-10193 01
- Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 871-10253 08
- Plating by glass-bead peening
GSFC-11163 871-10256 08
- Durable cathodes for high-power inert-gas arcs
LEWIS-11162 871-10264 03
- Reduction of valve leakage - A concept
NPO-12003 871-10315 07
- Electroplating on titanium alloy
M-FS-21251 871-10338 08
- High temperature autoclave vacuum seals
M-FS-21131 871-10433 08
- Hot-blade stripper for polyester insulation on FCC
M-FS-20117 871-10461 08
- Copper/nickel eutectic brazing of titanium
ARC-10337 871-10525 08
- Optical shutter for use in shock tubes
ARC-10516 872-10128 03
- Annular objective apertures improve resolution of electron microscopes
ARC-10448 872-10171 03
- Cryogenic gel flow viscometer
ARC-10523 872-10180 03
- Restartable heat pipe
ARC-10198 872-10188 03
- Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 872-10258 06
- Explosive cord
M-FS-21928 872-10293 08
- A sensitive image intensifier which uses inert gas
LRL-10024 872-10312 03
- Inorganic glass ceramic slip rings
M-FS-20711 872-10313 04
- A cryopump for cooling objects at a distance
LRL-10031 872-10314 03
- Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 872-10318 04
- Magnets with stabilized conductors
HQ-10727 872-10465 03
- Thermocouple tape
LEWIS-11072 872-10515 04
- X-ray opaque additive for inspection of weld joints
M-FS-22896 873-10528 08
- Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 874-10011 04
- Survey of coatings for solar collectors
LEWIS-12510 875-10067 04
- Fabrication of porous plugs for control of liquid helium
M-FS-23218 875-10163 04
- COPPER ALLOYS**
Effects of high pressure hydrogen on metals
M-FS-18612 870-10162 04
- High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 870-10429 08
- High-temperature nickel-brazing alloy
LEWIS-10928 870-10537 08
- Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 870-10569 01
- Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 870-10577 07
- Low-cost high-temperature brazing material
LEWIS-11209 870-10672 04
- Metal alloy resistivity measurements at very low temperatures
NUC-10557 871-10104 04
- High-intensity source of extreme ultraviolet
HQ-10754 872-10528 03
- COPPER CHLORIDES**
Growing single crystals in silica gel
ERC-10306 870-10479 02
- Double-discharge copper-vapor laser
NPO-13348 875-10123 03
- COPPER COMPOUNDS**
Alternating current losses in superconducting coils
M-FS-21129 872-10360 03
- COPPER FLUORIDES**
High energy density electrochemical cell
LEWIS-10969 870-10151 01
- COPPER OXIDES**
Improved fire-resistant coatings
GSFC-10072 871-10198 04
- Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 871-10208 04
- CORDAGE**
Remotely actuated release mechanism
NPO-10698 870-10286 01
- Cylindrically shaped rope ladder
M-FS-16319 872-10688 07
- CORE SAMPLING**
Planetary rock corer and drill concepts
NPO-11416 872-10398 07
- CORE STORAGE**
Optimal read/write memory system components
M-FS-22044 872-10697 01
- Braid read-only memory
NPO-11570 873-10136 01
- Tetrad bubble domain chip arrangement for multiplexing
M-FS-22296 873-10202 02
- Hologram recording tubes
M-FS-22590 873-10330 03
- Open coil structure for bubble-memory-device packaging
LANGLEY-11704 875-10219 01
- Variable-gap bias structure for magnetic bubble memory package
LANGLEY-11765 875-10221 01
- A 1-1/2-level on-chip-decoding bubble memory chip design
LANGLEY-11766 875-10222 01

CORES

Constant-voltage drive current-steering switch
 NPO-10743 B70-10046 01
 Development of lightweight cryogenic tank supports
 M-FS-20726 B70-10291 07
 Computerized toroidal transformer design
 NPO-11115 B70-10606 09
 Compact electric heater
 LEWIS-11172 B70-10677 03
 Improved wax mold technique forms complex passages in solid structures
 XLA-07829 B71-10063 05
 Three bit mass spectral search program
 NPO-11960 B72-10747 09

CORK (MATERIALS)
 Immersed ultrasonic inspection of high acoustical attenuative structures
 MSC-15702 B70-10055 03

CORRECTION
 Beam squint correction for a diplex, retrodirective phased array
 GSFC-11023 B71-10444 02
 Optical alignment of electrodes on electrical discharge machines
 XAC-09489 B72-10036 07

CORRELATION
 Criteria for vibration testing
 GSFC-10737 B71-10266 06
 Screening method improves performance of nickel-cadmium batteries
 GSFC-11260 B71-10411 04
 Turbulent mixing film cooling correlation
 LEWIS-11417 B72-10326 07

CORRELATION COEFFICIENTS
 Analysis of multilayered fiber composites
 LEWIS-11347 B71-10372 09

CORRELATION DETECTION
 Single-channel digital command-detection system
 NPO-11302 B73-10342 02
 Multichannel high-speed correlator
 NPO-13097 B75-10323 02

CORRELATORS
 Optical probing of supersonic flows with statistical correlation
 M-FS-20642 B71-10252 03

CORROSION
 Shelf and cycle life evaluation of silver-zinc cells
 NPO-11258 B70-10214 01
 Self-forming shim or gasket for mounting heavy equipment
 KSC-10504 B70-10289 07
 Self-contained miniature electronics transceiver provides voice communication in hazardous environment
 KSC-10164 B70-10335 01
 Improved heat-resistant garments
 MSC-12109 B70-10544 08
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
 Metal-to-ceramic seals - A literature survey
 NPO-11430 B71-10116 08
 A silver ion water sterilization system
 MSC-15734 B71-10278 04
 Reduction of valve leakage - A concept
 NPO-12003 B71-10315 07
 Adhesion theory review
 AEC-10083 B72-10231 04

Valve degradation detector
 ARC-10850 B74-10117 03

CORROSION PREVENTION
 Stress corrosion crack inhibiting method for titanium
 NPO-10271 B70-10129 03
 High-temperature nickel-brazing alloy
 LEWIS-10928 B70-10537 08
 Nonflammable organic-base paint for oxygen-rich atmospheres
 M-FS-20486 B71-10077 04
 Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
 Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04
 Resin additive improves performance of high-temperature hydrocarbon lubricants
 LEWIS-11364 B71-10394 04
 Low cost anti-galling bushings
 LEWIS-11724 B72-10359 08

CORROSION RESISTANCE
 Economical weatherproof helical antenna
 XKS-08485 B70-10016 01
 Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 B70-10021 01
 Stress corrosion cracking evaluation of precipitation-hardening stainless steel
 M-FS-20667 B70-10140 04
 Surface treatment for valve seats
 NPO-10779 B70-10202 08
 Thermal treatment and mechanical properties of aluminum-2021
 M-FS-20559 B70-10369 04
 Increased resistance to stress corrosion of aluminum alloys
 M-FS-20788 B70-10396 04
 Testing of brazed and welded connections of stainless-steel tubing
 M-FS-20806 B70-10417 08
 Efficient pressure-transformer for fluids
 M-FS-20830 B70-10595 07
 Preparation of perfluoropolyether prepolymers
 NPO-10765 B71-10004 04
 Preparation of highly fluorinated polyurethanes
 NPO-10767 B71-10005 04
 Ceramic backup ring prevents undesirable weld-metal buildup
 NUC-10357 B71-10117 08
 Water electrolysis module
 ARC-10246 B71-10203 03
 Al/Cl₂ molten salt battery
 HQ-10696 B72-10527 01
 Materials data handbook on titanium
 6Al-4V
 M-FS-22796 B73-10372 04
 Materials data handbooks on aluminum alloys
 M-FS-22798 B73-10373 04
 Materials data handbook on Inconel Alloy 718
 M-FS-22793 B73-10396 04
 Materials data handbooks on stainless steels
 M-FS-22797 B73-10397 04
 A superior process for forming titanium hydrogen isotopic films
 LEWIS-12083 B75-10001 03
 Silicon nitride used as a rolling-element bearing material
 LEWIS-12447 B75-10134 06

CORROSION TESTS

Improved burst disk/cutter assembly
 KSC-10516 B70-10583 07

CORRUGATED PLATES
 Corrugated battery electrode
 GSFC-11368 B73-10515 01
 Honeycomb battery plaque
 GSFC-11367 B73-10519 01

CORRUGATING
 Comparison of aerodynamic noise from three nose-cylinder combinations
 M-FS-20816 B70-10690 03
 Horn antenna with v-shaped corrugated surface
 LANGLEY-11112 B74-10260 01

COSINE SERIES
 Multi-dimensional real Fourier transform
 NPO-11648 B71-10133 09

COSMIC DUST
 Analysis of microsize particulates
 ARC-10647 B72-10565 04
 Cosmic dust or other similar outer-space particles location detector
 GSFC-11291 B73-10282 02

COSMIC RAYS
 Reduction of background in an X-ray proportional counter
 HQ-10253 B70-10169 02
 Scintillation detector for carbon-14
 ARC-10378 B71-10144 03
 A liquid radiation detector with high spatial resolution
 MSC-13965 B72-10034 03

COST ANALYSIS
 Program audit, A management tool
 KSC-10557 B71-10380 01
 FORTRAN manpower account program
 NPO-11973 B72-10623 09
 A linear programming manual
 HQ-10743 B72-10671 09
 Integrated multi-path program analysis and cost technique (IMPACT)
 M-FS-21880 B72-10676 09
 A method for economic evaluation of redundancy levels for aerospace systems
 KSC-10754 B73-10067 09
 The Langley Research Center
 NASA/PERT TIME III
 LANGLEY-11887 B75-10302 09

COST EFFECTIVENESS
 COPTRAN - A method of optimum communication systems design
 ERC-10273 B70-10501 09
 Computer program for discounted cash flow/rate of return evaluations
 M-FS-19040 B71-10377 09
 Urban air pollution dispersion model
 AEC-10004 B72-10003 03
 Survey of information concerning large diameter deep hole drilling
 AEC-10051 B72-10238 08
 Low cost anti-galling bushings
 LEWIS-11724 B72-10359 08
 Design criteria monograph for pressurized metal cases
 LEWIS-11835 B72-10633 04
 Satellite auxiliary propulsion systems
 NPO-11744 B73-10023 06

COST ESTIMATES
 Information quality-control model
 NPO-11431 B71-10281 06
 Survey of information concerning large diameter deep hole drilling
 AEC-10051 B72-10238 08

- Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06
- COST REDUCTION**
Fabricating subscale components for application to full-scale parts
M-FS-20805 B70-10390 07
Improved protection for silicon solar cells
LEWIS-11065 B70-10706 08
Welded polypropylene liners for large descaling tanks
M-FS-18711 B71-10012 07
Producing graphite with desired properties
NUC-11001 B71-10042 04
Accurate pointing of tungsten welding electrodes
ARG-10449 B71-10048 08
Pipe installation technique avoids disturbing work areas
MSC-15581 B71-10093 06
Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02
Cast segment evaluation
M-FS-21354 B71-10363 08
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02
Technique for producing wind-tunnel heat-transfer models
ARC-10658 B72-10349 08
Small, low cost, artificial kidney
AEC-10011 B72-10371 05
A new low-cost method for producing collimating mirrors
LEWIS-11553 B72-10513 08
A linear programming manual
HQ-10743 B72-10671 09
- COSTS**
Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06
Generalized safety equation - A concept
M-FS-20522 B71-10183 06
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Predicting service life margins
M-FS-24015 B71-10194 06
Closed-loop control of stochastic nonlinear systems
MSC-13858 B71-10306 09
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
- A tool for measuring elevator cable tension
KSC-10708 B72-10509 07
Built-in bleeder system in laminated plastic structures
MSC-17713 B72-10562 08
- Coulometers**
Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01
Improved reversible coulometer cell
SAN-10051 B71-10176 02
- COUNTERFLOW**
Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
- COUNTERS**
A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
Ranging code processor
NPO-10066 B70-10060 02
High speed television camera system processes photographic film data for digital computer analysis
NPO-10745 B70-10282 02
Pulse-rate averaging circuit
GSFC-10718 B70-10370 01
Airborne spectrometer senses several gases
MSC-13234 B70-10438 03
Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03
Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
Inexpensive automatic ranging for digital voltmeters and frequency counters
NUC-10240 B70-10530 01
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
High-accuracy detector for laser radar
MSC-13275 B70-10570 01
Digital-voltage curve generator
NPO-11104 B70-10590 02
Electronic strain-level counter
LANGLEY-10756 B70-10716 02
Multifunction audio digitizer for communications systems
MSC-13855 B71-10318 02
Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
Durability tester for FCC connectors
M-FS-20128 B71-10418 08
Digital aspect clock
ARC-10088 B71-10440 02
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Cable insulation cut-through tester
M-FS-20114 B71-10459 08
Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
New reaction tester accurate within 56 microseconds
MSC-13604 B72-10031 05
An improved aesthesiometer
MSC-13609 B72-10032 05
A liquid radiation detector with high spatial resolution
MSC-13965 B72-10034 03
- Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
A manually set magnetic wire counter
AEC-10039 B72-10369 01
Indexing film with a fluidic sensor
MSC-14117 B72-10501 02
Traveling digital counters for micrometers
LANGLEY-11258 B73-10042 06
Fill-in binary loop pulse-torque quantizer
M-FS-23100 B75-10037 02
Techniques for decoding speech phonemes and sounds: A concept
GSFC-11898 B75-10086 02
Fast Fourier transformation computer using fast counters
NPO-13110 B75-10175 02
Position sensing materials wound on a reel
GSFC-11902 B75-10249 07
Start/stop switches for testing detonation velocity of explosives
KSC-10793 B75-10255 01
- COUNTING**
Elimination of redundancy in telemetered data
HQ-10585 B70-10431 06
High efficiency telemetry method
NPO-10388 B71-10371 02
Improved methods for counting bacteria in physiological fluids
GSFC-11917 B74-10231 05
- COUNTING CIRCUITS**
Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
Pulse-rate averaging circuit
GSFC-10718 B70-10370 01
Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01
A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01
Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
Computerized logic design of digital circuits
M-FS-22401 B74-10225 09
- COUPLED MODES**
Technique for increasing yield of trifluoroni-trosomethane-tetrafluorone copolymer
ARC-10566 B72-10418 04
- COUPLERS**
A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
Directional coupler for optical waveguides
ERC-10094 B70-10381 03
Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
M-FS-21924 B72-10316 01
Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
HQ-10844 B75-10087 03

COUPLING

Power semiconductor device with negative thermal feedback
 HQ-10577 B70-10262 01
 Apparatus for simultaneous ion counting and current recording in mass spectrometry
 LEWIS-11103 B70-10471 03
 Laser wavelength selector and output coupler
 ERC-10248 B70-10507 02
 Log amplifier instrument measures physiological biopotentials over wide dynamic range
 ARC-10032 B70-10508 01
 Ac-coupled ultrahigh input impedance amplifier
 LEWIS-11154 B70-10651 01
 Multichannel intercom with simultaneous send/receive capability
 M-FS-18808 B71-10228 02
 Vibrational transfer functions for base excited systems
 M-FS-21432 B71-10441 09

COUPLINGS

Mechanical characteristics of the Bossler coupling
 HQ-10508 B70-10072 07
 High-powered automatic latching device
 MSC-15474 B70-10198 07
 Adjustable support spring
 ARC-10203 B70-10636 07
 Long life, low cost ball valve, with lifted seals and cartridge type construction
 MSC-13430 B70-10653 07
 Self-sealing, easily purged quick-disconnect hose coupling
 MSC-17009 B70-10699 07
 Carriage-rail assembly for high-resolution mechanical positioning
 M-FS-20908 B70-10714 07
 Fluid slip ring transfers coolant to rotating equipment
 MSC-13451 B71-10083 07
 Remote coupling of air lines
 NUC-10225 B71-10101 07
 Isolated-line commutator-amplifier
 M-FS-20734 B71-10148 02
 Hot tap thermowell installation
 MSC-12427 B71-10302 07
 Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
 KSC-10518 B71-10364 03
 Instrument accurately measures stress loads in threaded bolts
 M-FS-21121 B71-10486 01
 Method for calculating the stresses in pressure vessels
 MSC-13515 B71-10514 06
 Interconnections for fluidic circuits
 ARC-10481 B72-10164 02
 Improved high-temperature gimbal joint
 LEWIS-11705 B72-10489 06
 Flexible thermal device
 M-FS-21630 B72-10612 04
 Fill and vent quick disconnect
 M-FS-21822 B72-10645 07
 Mechanical coupling for high cyclic loading
 LEWIS-11690 B74-10001 06
 Design criteria monograph on turbopump shafts and couplings
 LEWIS-12204 B74-10014 07

COVALENT BONDS

Covalent bonding of antibodies of polystyrene latex beads: A concept
 MSC-13906 B72-10006 05
 Covalent bonding of polycations to small polymeric particles
 NPO-13487 B75-10327 04

COVARIANCE

Derivation of a general perturbation solution - Its application to determination of orbit
 MSC-13377 B70-10442 03
 Elements of orbit-determination theory - Textbook
 NPO-11466 B71-10425 03

COVERINGS

Improved protection for silicon solar cells
 LEWIS-11065 B70-10706 08
 Application of calibration masks to TV vidicon tube
 KSC-10589 B71-10404 02
 Pressure sensitive gas flow meter
 ARC-10219 B72-10049 06
 Multipurpose top for liquid helium Dewar
 ARC-10533 B72-10302 03
 An economical vent cover
 M-FS-20692 B72-10348 07
 Filter cassette for high volume air sampler
 LEWIS-11469 B72-10379 03
 Plastic covering on airfoil structure provides smooth uninterrupted surface
 MSC-12631 B74-10270 08
 Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03

COWLINGS

Reversed cowl-flap thrust augmentor
 ARC-10754 B74-10046 06
 Tailor making high performance graphite fiber reinforced PMR polyimides
 LEWIS-12416 B75-10137 04

CRACK PROPAGATION

Stainless steel 301 and Inconel 718 hydrogen embrittlement
 MSC-13557 B70-10621 04
 New understanding of fiber composite materials
 NPO-11605 B71-10161 04
 Failure in glass
 AEC-10088 B72-10364 04
 Fatigue testing device
 LANGLEY-10426 B73-10047 07
 Probability of stress-corrosion fracture under random loading
 NPO-13113 B73-10453 04

CRACKING (FRACTURING)

Stress corrosion crack inhibiting method for titanium
 NPO-10271 B70-10129 03
 Stress corrosion cracking evaluation of precipitation-hardening stainless steel
 M-FS-20667 B70-10140 04
 A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01
 Prevention of cracking of soldered joints in electronic assemblies
 M-FS-20544 B70-10241 08
 Fabrication of hollow ball bearings by diffusion welding
 LEWIS-11026 B70-10331 08
 Improved welding of Rene-41
 M-FS-18821 B70-10367 08

Nondestructive assessment of penetration of electron-beam welds
 MSC-15955 B70-10466 08
 Technique for depositing silicon dioxide on indium arsenide improves adhesion
 ERC-10130 B70-10475 04
 Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
 M-FS-18794 B70-10506 04
 The mechanism of stress-corrosion cracking in 7075 aluminum alloy
 M-FS-18614 B70-10527 04
 Potassium silicate-zinc oxide solution for metal finishes
 GSFC-10361 B70-10600 04
 TFE coating extends life of flexible metal compressor diaphragm
 LEWIS-11113 B70-10609 07
 Welded polypropylene liners for large descaling tanks
 M-FS-18711 B71-10012 07
 Effect of size on cracking of materials
 NPO-11602 B71-10158 04
 Improved fire-resistant coatings
 GSFC-10072 B71-10198 04
 Environmental effects on silicon solar cells
 NPO-11475 B71-10282 02
 Shielding method for polycrystalline and epitaxial growths
 M-FS-20162 B71-10434 04
 Glass tube splitting tool
 MSC-17183 B71-10516 07
 Repeatable method of thermal stress fracture test of brittle materials
 NUC-11019 B72-10258 06
 Joining precipitation-hardened nickel-base alloys by friction welding
 LEWIS-11514 B72-10288 08
 Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
 M-FS-21113 B72-10321 04
 Fracture toughness testing data: A technology survey and bibliography
 LEWIS-12503 B75-10139 03

CRACKS

Methyl alcohol used as penetrant inspection medium for porous materials
 NUC-10419 B71-10103 06
 Interpretation of aluminum-alloy weld radiography
 M-FS-20943 B71-10206 08
 Optimized techniques and requirements for computer improvement of structural weld radiographs
 M-FS-21627 B71-10492 09
 A tool for cutting ultra thin slits in metals
 KSC-10770 B72-10433 07
 Triangular wheel locomotion mechanism
 NPO-11366 B72-10714 06
 Prototype ultrasonic instrument for quantitative testing
 M-FS-22350 B73-10051 02
 Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
 MSC-14555 B74-10156 06
 Semipermanent sealing of leaks in high vacuum systems
 ARC-10881 B74-10175 04

CRANES

Recommended safety guides for industrial laboratories and shops
 SAN-10050 B71-10175 07

CRASHES

Aircraft-crash-locating transmitter
features design improvements
M-FS-16609 B71-10213 02

CRAWLER TRACTORS

Tandem steerable running gear
M-FS-22012 B72-10499 07

CREATININE

Increasing the sensitivity of the Jaffe
reaction for creatinine
NPO-11587 B73-10021 04

CREEP ANALYSIS

Computer program for predicting creep
behavior of bodies of revolution
NUC-11104 B71-10037 09

CREEP PROPERTIES

Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
Filled polymers for bearings and seals
used in liquid hydrogen
LEWIS-10887 B70-10573 04
Improved method for cladding the inside
of metal tubes
LEWIS-11174 B70-10723 08
Combined high vacuum/high frequency
fatigue tester
LEWIS-11210 B71-10405 06

CREEP RUPTURE STRENGTH

Directionally solidified superalloy
HQ-10522 B70-10058 04
Solid state welding of
dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Superior high temperature properties
available in directionally solidified
nickel-base eutectic alloys
LEWIS-12562 B75-10246 04

CREEP STRENGTH

Self-forming shim or gasket for mounting
heavy equipment
KSC-10504 B70-10289 07
High-strength magnetic materials
LEWIS-10697 B70-10596 03
Tungsten-reinforced tantalum
LEWIS-11750 B72-10684 04
Creep-fatigue analysis by Strainrange
Partitioning
LEWIS-12072 B73-10314 04
High strength forgeable tantalum base
alloy
LEWIS-11386 B75-10023 04

CREEP TESTS

Effects of decontamination, sterilization,
and thermal vacuum on polymeric
products
NPO-11250 B70-10208 04

CREWS

Cell for electrolysis of water vapor
ARC-10521 B72-10166 03

CRITERIA

Design criteria monograph for valve
components
LEWIS-12327 B74-10087 06
Design criteria monograph for valve
assemblies
LEWIS-12332 B74-10227 06
Design criteria monograph on centrifugal
flow turbopumps
LEWIS-12346 B74-10228 06
Design criteria monograph on turbopump
systems
LEWIS-12499 B75-10135 06

CRITICAL FREQUENCIES

Dynamic balancing of high-speed rotary
machinery
HQ-10486 B70-10433 06

CRITICAL LOADING

New structural approach for determining
load carrying capability of filament wound
composite materials
M-FS-15121 B70-10408 06

CRITICAL POINT

Uniform data system standardizes
technical computations and the purchasing
of commercially important gases
NUC-10549 B70-10333 04
Crystal growing by electrodeposition
from dense gaseous solutions
NPO-10440 B70-10676 04
Survey of heat transfer to near critical
fluids
LEWIS-11289 B71-10262 03

CRITICAL PRESSURE

Thermally induced oscillations in fluid
flow
M-FS-20449 B70-10299 03
Fracture mechanics evaluation of
Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
Properties of ionization breakdown of air
at microwave frequencies and optimization
of component dimensions for maximum
microwave power
M-FS-21924 B72-10316 01

CRITICAL TEMPERATURE

Concept for a gas operated actuator
NPO-11340 B70-10516 07
Fracture mechanics evaluation of
Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09

CRITICAL VELOCITY

Mechanical characteristics of the Bossler
coupling
HQ-10508 B70-10072 07
Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
Turbopump radial and axial rotor support
system
M-FS-21495 B72-10264 07
Computer program for calculating critical
speeds of rotating shafts
LEWIS-11910 B74-10128 09

CROSS CORRELATION

Block-coded communications
NPO-11397 B70-10242 02
Reducing streak film data via electronic
cross correlator
M-FS-18804 B70-10365 01
Method of statistical filtering
MSC-13493 B70-10427 06
Optical probing of supersonic
aerodynamic turbulence
M-FS-20686 B70-10665 03
Atmospheric pollution measurement by
optical cross correlation methods - A
concept
M-FS-12078 B71-10224 02
Self-synchronizing, bi-orthogonal coded
PCM telemetry system
GSFC-11237 B71-10324 02

CROSS COUPLING

Multi-frequency resonant antenna
HQ-10215 B70-10098 02
Low-loss, circularly-polarized dichroic
plate
NPO-13171 B74-10283 01

CROSS FLOW

Investigations of a turbulent jet in a
crossflow
LEWIS-11680 B72-10437 06
Investigation of exit-velocity stratification
effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09

Investigations of multiple jets in a
crossflow
LEWIS-12102 B75-10149 03

CROSS SECTIONS

Interaction of crippling and
torsional-flexural instabilities for centrally
loaded columns
M-FS-20556 B70-10598 06

CROSSLINKING

Difunctional polyisobutylene prepared by
polymerization of monomer on molecular
sieve
NPO-10893 B70-10334 04
Statistical characterization of
phenolic-novolac structures
ARC-10393 B71-10255 04
Polymerization of perfluorobutadiene at
near-ambient conditions
NPO-10447 B71-10291 04
Coatings from copolymers of
tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04
Thermally stable polyimides from
solutions of monomeric reactants
LEWIS-11325 B71-10442 04
Functionally terminated liquid nitroso
fluorocarbon terpolymers
M-FS-21539 B72-10493 04
New type of trifunctional alcohol
NPO-10714 B72-10553 04

CROSSOVERS

Wall attachment, fluoric crossover
"AND" gate
XLA-07391 B71-10178 07

CRUDE OIL

A method for obtaining high ductility in
critical areas of aluminum castings
M-FS-18705 B70-10121 08
Predicting vibrational failure of flexible
ducting
M-FS-16750 B71-10150 06
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01

CRYOGENIC EQUIPMENT

Superconducting "transistor" acts as
high-speed switch
HQ-10547 B70-10082 01
Metal cooldown, flow instability, and heat
transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Development of lightweight cryogenic
tank supports
M-FS-20726 B70-10291 07
New structural approach for determining
load carrying capability of filament wound
composite materials
M-FS-15121 B70-10408 06
Evaluation of two designs for cryogenic
insulation
M-FS-14740 B70-10415 03
Molecular sieves control contamination
and and insulate in thermal regenerators -
A concept
GSFC-10910 B70-10424 07
Sorption vacuum trap
ERC-90051 B70-10449 06
Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
The low-cost cryostat
NUC-11034 B70-10592 03
Frost as an insulator
NUC-11039 B70-10593 03
Stainless steel 301 and Inconel 718
hydrogen embrittlement
MSC-13557 B70-10621 04

- Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
- Low temperature fluid blender
LEWIS-11206 B71-10058 04
- Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
- Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03
- Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
ARC-10560 B72-10278 03
- Design curve for liquid helium storage vessels
LEWIS-11498 B72-10286 02
- Multipurpose top for liquid helium Dewar
ARC-10533 B72-10302 03
- A closed loop cryogenic environment pressure regulating system
MSC-13880 B72-10390 02
- Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
- High pressure liquid gas pump
MSC-14087 B72-10590 06
- Magnetocaloric pump
LEWIS-11672 B73-10124 07
- Self-powered mixer for pressurized containers
LEWIS-12054 B73-10312 03
- Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
- Cryogenic line insulation made from prefabricated polyurethane shells
MSC-19523 B75-10110 06
- Fabrication of porous plugs for control of liquid helium
M-FS-23218 B75-10163 04
- A two-degree Kelvin refrigerator
NPO-13459 B75-10181 03
- CRYOGENIC FLUID STORAGE**
- Optimizing insulation weight on cryogenic storage tanks
KSC-10399 B70-10102 03
- Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
- Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03
- Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
- Pilot-booster control valve
M-FS-20635 B70-10558 07
- The low-cost cryostat
NUC-11034 B70-10592 03
- Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
- Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
- System accurately controls pressure in cryogenic tanks
LEWIS-11329 B71-10118 03
- Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
- Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
ARC-10560 B72-10278 03
- Design curve for liquid helium storage vessels
LEWIS-11498 B72-10286 02
- Multipurpose top for liquid helium Dewar
ARC-10533 B72-10302 03
- Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03
- Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06
- Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06
- Geysering inhibitor pipe
KSC-10615 B73-10110 07
- Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04
- Increasing terminal strip efficiency at cryogenic temperatures
M-FS-23234 B75-10266 03
- Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06
- CRYOGENIC FLUIDS**
- Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
- Investigation of positive shaft seals
M-FS-18589 B70-10176 07
- Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
- Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
- Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04
- Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
- Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
- Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04
- A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
- Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03
- Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06
- An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06
- Improved thermal isolation for superconducting magnet systems
NPO-11875 B74-10158 02
- Heat-operated cryogenic electrical generator
NPO-13303 B75-10116 03
- Computer program for calculating thermodynamic and transport properties of fluids
LEWIS-12520 B75-10188 09
- CRYOGENIC MAGNETS**
- Wide-range nuclear magnetic resonance detector
LEWIS-11513 B72-10478 03
- CRYOGENIC ROCKET PROPELLANTS**
- Low temperature uses of helium
LEWIS-11171 B70-10673 03
- Rising-plate rheometer
ARC-10524 B72-10026 03
- Cryogenic gel flow viscometer
ARC-10523 B72-10180 03
- Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
- Geysering inhibitor pipe
KSC-10615 B73-10110 07
- CRYOGENIC STORAGE**
- Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
- CRYOGENICS**
- Stranded superconducting cable of improved design
ARG-90108 B70-10070 01
- The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 B70-10146 04
- Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03
- Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
- Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
- Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
- High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
- Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
- Evaluation of two designs for cryogenic insulation
M-FS-14740 B70-10415 03
- Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
- The water-cryogen heat exchanger
NUC-11029 B70-10591 03
- Frost as an insulator
NUC-11039 B70-10593 03
- Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
- Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
- Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07
- Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
- Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 B71-10261 04
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- A liquid radiation detector with high spatial resolution
MSC-13965 B72-10034 03
- Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04

- A reliable liquid helium detector
LEWIS-11487 B72-10145 01
- Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
- Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 B72-10154 03
- Superior cryogenic insulation developed
M-FS-21560 B72-10187 04
- Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07
- Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 B72-10346 04
- Helium leak measurements using CO₂ as a carrier
M-FS-21742 B72-10354 03
- Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
- CRYOPUMPING**
- Open-celled polyurethane foam
KSC-10517 B70-10349 04
- Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
- Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
- A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
- CRYOSTATS**
- Strain compatibility tests for sprayed foam cryogenic insulation
M-FS-16063 B70-10423 04
- The low-cost cryostat
NUC-11034 B70-10592 03
- CRYSTAL DEFECTS**
- Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
- Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
- High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- Improved magnesia for thermal control coatings
ARC-10677 B72-10424 04
- CRYSTAL GROWTH**
- Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04
- Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04
- Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
- Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03
- Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
- Growing single crystals in silica gel
ERC-10306 B70-10479 02
- Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
- Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
- Vapor phase growth of group 3, 4, and 5 compounds by HCl transport of elements
LANGLEY-11144 B73-10056 04
- Fabrication of magnetic bubble memory overlay
M-FS-22377 B73-10096 01
- Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- CRYSTAL LATTICES**
- Determination of diffusion lengths in silicon by an X-ray method
LEWIS-10984 B70-10150 01
- Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
- Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
- Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
- Microminiature gas chromatographic column
ARC-10594 B72-10306 04
- Improved magnesia for thermal control coatings
ARC-10677 B72-10424 04
- CRYSTAL OPTICS**
- Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03
- CRYSTAL OSCILLATORS**
- Crystal-controlled multivibrator
NPO-11627 B72-10155 01
- Oven temperature controller for electronic components
GSFC-11466 B73-10052 02
- All-digital phase-lock loops for noise-free signals
NPO-11914 B73-10350 01
- Frequency control circuit for all-digital phase-lock loops
NPO-11936 B73-10351 01
- Continuous-phase frequency-shift-keyed generator
LANGLEY-11638 B75-10218 02
- Temperature-stable Gunn-diode oscillator
M-FS-23242 B75-10306 01
- CRYSTAL STRUCTURE**
- High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
- Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
- Improved magnesia for thermal control coatings
ARC-10677 B72-10424 04
- Proposed semiconductor film improvement
HQ-10685 B72-10438 04
- Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- CRYSTALLINITY**
- Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06
- Photoemissive coating
M-FS-22003 B72-10638 08
- CRYSTALLIZATION**
- Improved process for synthesizing anilinosilane compounds
M-FS-14948 B70-10105 04
- A stable liquid crystal for electro-optical displays
HQ-10714 B72-10746 04
- CRYSTALLOGRAPHY**
- Growing single crystals in silica gel
ERC-10306 B70-10479 02
- Less-expensive Rochon prisms
M-FS-20554 B70-10681 03
- Chemical-ionization visible and ultraviolet gas lasers: A concept
NPO-13289 B75-10115 03
- Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- CRYSTALS**
- Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
- Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03
- Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02
- Tone-activated, remote, alert communication system
NPO-11132 B71-10307 02
- High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04
- A new optical recording medium
M-FS-22348 B73-10095 03
- Collimation of electron and X-ray beams using zeolite crystals
NPO-13557 B75-10329 03
- CUBES (MATHEMATICS)**
- Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
- CUFFS**
- A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
- Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05
- CULTIVATION**
- Reusable anaerobic system for microbiological studies - A concept
MSC-13920 B71-10495 05
- CULTURE TECHNIQUES**
- Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
- Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05
- Automatic agar tray inoculation device
LANGLEY-11074 B72-10637 05
- Ionene treatment of surfaces stimulates cell growth
NPO-13421 B75-10121 04

- Microbial load monitor
 MSC-14062 B75-10167 05
 Continuous detection of viable
 micro-organisms by chemiluminescence
 MSC-10170 B75-10170 05
 Rapid method for determination of
 antimicrobial susceptibilities pattern of
 urinary bacteria
 GSFC-12039 B75-10253 05

CURIE TEMPERATURE

- Manganese bismuth thin film for large
 capacity digital memories
 M-FS-21246 B72-10107 03

CURING

- Use of acrylic sheet molds for elastomeric
 products
 MSC-15636 B70-10019 08
 A new low-expansion nonflammable
 printed circuit board
 M-FS-20408 B70-10154 01
 Motor brush wear measured with strain
 gages
 GSFC-10886 B70-10266 01
 Low-temperature radiation-resistant
 material for ball-bearing retainers
 NUC-10058 B70-10576 04
 Simple bonding technique for
 high-temperature ceramic coatings
 LEWIS-11085 B70-10580 08
 Bonding of strain gages to fiber
 reinforced composite plastic materials
 LEWIS-11151 B70-10630 01
 Inexpensive, removable coating for
 plaster tooling
 MSC-15819 B70-10666 04
 Nonflammable organic-base paint for
 oxygen-rich atmospheres
 M-FS-20486 B71-10077 04
 Improved reflective coating for
 integrating spheres
 GSFC-10855 B71-10110 03
 Promising born/graphite/resin
 composites
 M-FS-21126 B71-10217 04
 Statistical characterization of
 phenolic-novolac structures
 ARC-10393 B71-10255 04
 Coatings from copolymers of
 tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 B71-10303 04
 Instant acting adhesive system
 MSC-13732 B71-10317 04
 Application of calibration masks to TV
 vidicon tube
 KSC-10589 B71-10404 02
 High temperature autoclave vacuum
 seals
 M-FS-21131 B71-10433 08
 High strength, medium density molded
 foam
 AEC-10053 B72-10235 04
 Devolatilization of polymer resins
 GSFC-11358 B72-10280 04
 A new vibration dampening adhesive
 MSC-17668 B72-10284 04
 New compression molding process of
 thermosetting plastic compounds
 LANGLEY-10782 B72-10356 08
 Curable polyphosphazenes
 M-FS-23134 B75-10038 04
 Diamine curing agents for
 polyurethanes
 LANGLEY-11829 B75-10261 08

CURIUM 244

- Radioisotope thermionic power supply for
 spacecraft
 ARC-10438 B72-10212 03

CURRENT AMPLIFIERS

- Oxygen pressure control for electrolysis
 cells
 ARC-10250 B72-10074 02
 Vibrating ribbon bolometer: A concept
 XAC-10768 B72-10170 03
 A new dry biomedical electrode
 JSC-14321 B73-10146 02
 Bio-isolated DC operational amplifier
 ARC-10596 B74-10112 01
 New broadband square-law detector
 NPO-13410 B75-10180 02

CURRENT DENSITY

- Oxygen-hydrogen fuel cell with an
 iodine-iodide cathode - A concept
 HQ-10379 B70-10246 02
 Development of superconductive
 magnets
 LEWIS-11170 B70-10678 03
 Improved sheath removal technique for
 very small thermocouples
 LEWIS-11228 B71-10179 01
 High solar intensity radiometer
 LEWIS-11533 B72-10130 03
 Metastable atom probe for measuring
 electron beam density profiles
 M-FS-21593 B72-10485 03

CURRENT DISTRIBUTION

- Multi-frequency resonant antenna
 HQ-10215 B70-10098 02
 Compensation of voltage drops in
 solid-state switches used with
 thermoelectric generators
 NPO-11388 B72-10138 01
 Cell for electrolysis of water vapor
 ARC-10521 B72-10166 03
 Generalized current distribution rule
 LANGLEY-11565 B74-10093 02

CURRENT REGULATORS

- Solid-state ac-to-dc converter
 HQ-10545 B70-10147 02
 Load cell for thermionic converter tests
 LEWIS-11068 B70-10470 01
 Controlled current inductors
 ERC-10139 B70-10494 01
 Small, efficient power supply for xenon
 lamps
 MSC-13637 B70-10684 01
 Saturable-reactor motor starter reduces
 line voltage fluctuations
 M-FS-18921 B71-10013 01
 Submersed sensing electrode used in
 fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01
 Polarographic carbon dioxide transducer
 amplifier
 MSC-13728 B71-10090 02
 Nonvolatile read/write memory element
 - A concept
 GSFC-10994 B71-10347 01
 Voltage regulator dissipates minimal
 power and functions as a voltage divider
 B71-10367 01
 Pseudo-saturating power converter
 NPO-11368 B72-10042 01
 Circuit controls turn-on current
 NPO-11339 B72-10079 01
 Versatile, analog-to-digital,
 power-regulator controller
 NPO-13178 B73-10467 02
 Self-healing fuse
 LEWIS-11964 B74-10004 02
 Radioisotope thermal generator (RTG)
 power conditioner
 LANGLEY-11313 B74-10022 03

CURVATURE

- Development of lightweight cryogenic
 tank supports
 M-FS-20726 B70-10291 07
 Remote determination of sea conditions
 by electromagnetic backscatter
 measurement
 M-FS-13777 B71-10027 04
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 Improved charged-particle analyzer - A
 concept
 XAC-05506 B71-10283 03
 Silicon contact for area reduction of
 integrated circuits
 M-FS-20688 B71-10368 01

CURVE FITTING

- Neutron ages computed from
 experimental activation data
 LEWIS-10949 B70-10557 09
 Determination of nonlinear resistance
 voltage-current relationships by measuring
 harmonics
 M-FS-20402 B71-10182 01
 Hybrid computer techniques for solving
 partial differential equations
 M-FS-21386 B71-10424 09
 Elements of orbit-determination theory
 - Textbook
 NPO-11466 B71-10425 03
 Cubic spline functions for curve fitting
 LRL-10034 B72-10311 09
 Computer program for fitting low-order
 polynomial splines by method of least
 squares
 LEWIS-11651 B72-10585 09
 Generalized curve fit and plotting
 (GECAP) program
 M-FS-22728 B74-10044 09

CURVED PANELS

- Analytical prediction of reverse buckling
 pressure for thin shells
 KSC-10515 B70-10582 06
 Computer program for buckling loads of
 orthotropic laminated stiffened panels
 subjected to biaxial in-place loads
 (BUCLASP 2)
 LANGLEY-11199 B74-10203 09
 Computer program for stresses and
 buckling of heated composite-stiffened
 panels and other structures (BUCLASP 3)
 LANGLEY-11533 B74-10204 09

CURVES (GEOMETRY)

- Analytical prediction of reverse buckling
 pressure for thin shells
 KSC-10515 B70-10582 06
 Digital-voltage curve generator
 NPO-11104 B70-10590 02
 An investigation of tandem-row,
 high-head pump inducers
 M-FS-21139 B71-10152 07
 Ultrasonic scanning system for in-place
 inspection of brazed-tube joints
 M-FS-21166 B71-10227 06

CUSHIONS

- Prevention of damage to delicate
 connectors during mounting of heavy
 engines for testing
 NUC-10322 B71-10044 06
 Viscoelastic cushion for patient support
 MSC-12447 B71-10316 05
 Cushion module for stowing electronic
 equipment
 ARC-10779 B74-10073 04
 The impact of water on free-falling
 bodies
 M-FS-23310 B75-10311 03

CUTTERS

Phenolic cutter for machining foam insulation
 M-FS-14170 B70-10089 07
 Vee-notch tool cuts specimens
 M-FS-20730 B70-10411 06
 Improved burst disk/cutter assembly
 KSC-10516 B70-10583 07
 Miniature grinder for solid specimens
 M-FS-20005 B71-10059 05
 Multiedge slitter for FCC
 M-FS-20112 B71-10457 08
 Cable insulation cut-through tester
 M-FS-20114 B71-10459 08
 Metal-shearing energy absorber
 HQ-10638 B71-10503 07
 Glass tube splitting tool
 MSC-17183 B71-10516 07
 Tubing cutter
 NPO-11524 B72-10095 07
 Slitting flat conductor cables with the single cutting edge slitter
 M-FS-20111 B72-10575 07
 Portable beveling tool
 M-FS-16863 B72-10678 07
 Apparatus for cutting elastomeric materials
 NPO-13146 B73-10521 07
 Precision glasscutter
 LANGLEY-11604 B74-10031 07
 Foam-machining tool with eddy-current transducer
 M-FS-23298 B75-10309 08

CUTTING

Low-cost orbiting grinder for cutting ducts
 M-FS-20684 B70-10126 07
 Universal router concept
 M-FS-20756 B70-10313 07
 Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 Weld beveling of large-diameter pipes
 KSC-10550 B71-10280 08
 Sprue cutoff tool for molded FCC plugs
 M-FS-20236 B71-10421 08
 Cold-blade stripper for polyimide and TFE insulation on FCC
 M-FS-20115 B71-10460 08
 Hot-blade stripper for polyester insulation on FCC
 M-FS-20117 B71-10461 08
 Handling fixture for soldering round wires to FCC
 M-FS-20118 B71-10464 08
 Rotary stripper for shielded and unshielded FCC
 M-FS-20119 B71-10465 08
 Explosive cord
 M-FS-21928 B72-10293 08
 A tool for cutting ultra thin slits in metals
 KSC-10770 B72-10433 07
 Slitting flat conductor cables with the single cutting edge slitter
 M-FS-20111 B72-10575 07
 Portable beveling tool
 M-FS-16863 B72-10678 07
 Apparatus for cutting elastomeric materials
 NPO-13146 B73-10521 07
 Alinement fixture for precision cutting of printed-wiring boards
 LANGLEY-11658 B74-10290 01

CYANIDES

Improved zinc oxide thermal control coatings
 NPO-11139 B72-10711 04

CYANURIC ACID

High energy density electrochemical cell
 LEWIS-10969 B70-10151 01

CYCLES

Motor brush wear measured with strain gages
 GSFC-10886 B70-10266 01
 Combined high vacuum/high frequency fatigue tester
 LEWIS-11210 B71-10405 06

CYCLIC LOADS

Mechanical coupling for high cyclic loading
 LEWIS-11690 B74-10001 06
 RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
 LEWIS-12388 B75-10186 09

CYLINDERS

Novel valve for reciprocating compressors - Concept
 MSC-15060 B70-10160 07
 Analysis of nonlinear vibrations of cylinders
 NPO-11736 B73-10302 09

CYLINDRICAL BODIES

Fabricating subscale components for application to full-scale parts
 M-FS-20805 B70-10390 07
 Easy insert, easy release toggle bolt fastener
 ARC-10140 B70-10509 07
 Novel wave generator adaptable to indoor surfboarding
 LEWIS-11096 B70-10563 03
 Compact fluid-flow restrictor
 MSC-15803 B70-10679 07
 Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
 KSC-10522 B70-10680 03
 Comparison of aerodynamic noise from three nose-cylinder combinations
 M-FS-20816 B70-10690 03
 Improved method for cladding the inside of metal tubes
 LEWIS-11174 B70-10723 08
 Absolute focus lock for microscopes
 LANGLEY-10184 B70-10728 07
 Non-symmetrical two dimensional scattering program
 NPO-11576 B71-10007 09
 Symmetrical two dimensional scattering program
 NPO-11578 B71-10008 09
 Hydraulically operated tilt table
 M-FS-21047 B71-10024 05
 Prediction of windage power loss in alternators
 LEWIS-10939 B71-10074 06
 Improved transducer for squeeze-film bearings
 M-FS-20826 B71-10140 07
 Improved reversible coulometer cell
 SAN-10051 B71-10176 02
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 Strong, easy-to-mold, spiral buttress thread
 LANGLEY-10755 B71-10336 08
 Vibration testing and analysis using holography
 M-FS-21050 B71-10352 03

Axisymmetric and cylindrical isostable structures - A concept
 NPO-12049 B71-10446 06
 Glass tube splitting tool
 MSC-17183 B71-10516 07
 A permeable rotating-wheel solvent extractor
 LRL-10033 B72-10343 04
 New compression molding process of thermosetting plastic compounds
 LANGLEY-10782 B72-10356 08
 Portable beveling tool
 M-FS-16863 B72-10678 07
 Cylindrically shaped rope ladder
 M-FS-16319 B72-10688 07

CYLINDRICAL CHAMBERS

Hydraulic brake safety valve
 M-FS-16444 B70-10207 07
 Method of stabilizing fluoric vortex valves and vortex amplifiers
 LEWIS-10553 B70-10668 07
 A 7.6m /25-ft/ extreme environments simulator
 NPO-11353 B71-10036 03
 Gyro spring augmentation system
 ARC-10496 B72-10010 06
 Water cavity degasser for electrolysis cells
 ARC-10244 B72-10246 03
 Linear accelerator: A concept
 KSC-10618 B72-10636 06
 Implantable drug therapy device: A concept
 NPO-11934 B72-10708 05

CYLINDRICAL SHELLS

Hoop restraint on beam-column behavior in a stiffened cylindrical shell
 M-FS-16172 B70-10394 06
 Radial heat flux transformer
 NPO-10828 B71-10311 03

CYLINDRICAL TANKS

Simple method for forming thin-wall pressure vessels
 ARC-10511 B72-10025 08
 Automatic water inventory, collecting, and dispensing unit
 LANGLEY-11071 B72-10663 06

CYTOCHROMES

Simple chamber facilitates chemiluminescent detection of bacteria
 LANGLEY-10705 B70-10525 05

D**DACRON (TRADEMARK)**

Wide-angle, circularly polarized, omnidirectional-array antenna
 GSFC-10928 B71-10033 01

DAMAGE

Prevention of damage to delicate connectors during mounting of heavy engines for testing
 NUC-10322 B71-10044 06
 Electronic ripple indicator
 KSC-10162 B71-10170 01
 Generalized safety equation - A concept
 M-FS-20522 B71-10183 06
 Peak structural response to nonstationary random excitations
 NPO-11617 B71-10188 06
 Technique for in-place welding of aluminum backed up by a combustible material
 LEWIS-11328 B71-10257 08

- Baffle to confine glow discharge in ion pump
M-FS-21575 B72-10324 03
Recovery of recordings from heat damaged magnetic tapes
JSC-14219 B73-10173 02
Repair of damaged insulation tiles
MSC-19549 B75-10321 04
- DAMPERS (VALVES)**
Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
- DAMPING**
Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05
Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
Effect of size on cracking of materials
NPO-11602 B71-10158 04
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
Rotordynamic response analysis program
HQ-10579 B71-10211 09
Criteria for vibration testing
GSFC-10737 B71-10266 06
On-line analysis of random vibrations
ARC-10154 B71-10284 09
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09
Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Viscoelastic cushion for patient support
MSC-12447 B71-10316 05
Inertial reference unit
NPO-11518 B72-10094 02
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
Energy absorber uses expanded coiled tube
AEC-10044 B72-10239 06
Control of oscillations in a discharge circuit
ARC-10556 B72-10304 01
Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06
Multiple reaction mass and isolation system
M-FS-24119 B72-10441 06
Eigenfunction solution of damped structural systems: DAMP
NPO-13480 B74-10169 09
New design of hingeless helicopter rotor improves stability
ARC-10807 B75-10132 06
- Two-directional active damper
LANGLEY-11815 B75-10259 06
- DAMPING TESTS**
Nonlinear damping in structures
M-FS-20701 B70-10341 03
Fluid dynamics test method
NPO-11895 B74-10211 03
- DATA ACQUISITION**
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Block-coded communications
NPO-11397 B70-10242 02
High speed television camera system processes photographic film data for digital computer analysis
NPO-10745 B70-10282 02
New data acquisition system records bearing measurements directly
LEWIS-10510 B70-10503 06
Biomedical recording system
MSC-13653 B70-10697 05
Electronic strain-level counter
LANGLEY-10756 B70-10716 02
Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01
Automatic reference level control for an antenna pattern recording system
M-FS-20257 B71-10014 01
Ultraviolet interferometer
HQ-10546 B71-10026 03
Economical phased-array antenna for environmental applications
HQ-10434 B71-10057 02
Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02
Computer-controlled mass spectrometer for on-line gas analysis
NPO-11427 B71-10191 03
Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01
Prediction of ducted fan performance
ARC-10615 B72-10064 09
Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07
Compression and R-wave detection of ECG/VCG data
MSC-14126 B72-10391 05
A continuous physiological data collector
M-FS-20835 B72-10402 05
High temperature permeameter for measuring magnetic properties
LEWIS-11609 B72-10443 03
FORTRAN manpower account program
NPO-11973 B72-10623 09
A system for automatic analysis of blood pressure data for digital computer entry
LEWIS-11751 B72-10632 05
Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 B72-10665 03
Automatic method of measuring silicon-controlled-rectifier holding current
LEWIS-11898 B72-10752 02
Automatic carrier acquisition system for phase-lock-loop receivers
NPO-11628 B73-10343 02
- Automated data acquisition and reduction system for torsional braid analyzer
LANGLEY-11578 B75-10073 02
- DATA CONVERTERS**
Communications link for SDS 900 series computers
NPO-11161 B70-10163 02
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
High speed sequential decoder
ARC-10657 B72-10568 09
Image data rate converter: A concept
NPO-11659 B73-10277 02
Page composer to translate binary electrical data to optical form
M-FS-22589 B75-10161 02
- DATA CORRELATION**
Data from various sources provide standard single-level resonance parameters for uranium 233
NUC-10229 B70-10357 03
Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
Compression and R-wave detection of ECG/VCG data
MSC-14126 B72-10391 05
Method of identifying clusters representing statistical dependencies in multivariate data
ARC-10744 B75-10140 09
Executive computer program for linking independent computer programs: ODINEX
LANGLEY-11324 B75-10194 09
Real-time video correlator
M-FS-23200 B75-10265 02
Sound separation probe
LEWIS-12507 B75-10286 03
Minimization search method for data inversion
NPO-99999 B75-10338 09
- DATA LINKS**
Automatic transmission line monitor
KSC-10385 B71-10288 02
- DATA MANAGEMENT**
Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09
Redundant data management system
M-FS-21831 B72-10589 09
Design criteria monograph for pressurized metal cases
LEWIS-11835 B72-10633 04
Automated Data Management Information System (ADMIS)
KSC-10619 B73-10053 09
Medical Information Management System (MIMS): An automated hospital information system
GSFC-11540 B73-10073 09
Synchronous ten-megabit biphasic detector
M-FS-22546 B73-10323 02
Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03
- DATA PROCESSING**
Device for printing alphanumeric listings and digital data plots
LEWIS-10954 B70-10002 02

SUBJECT INDEX

Array multiplier
ERC-90076 B70-10047 02

Automatic data generation scheme for finite-element method /FEDGE/- Computer program
NPO-11069 B70-10067 09

Wiring harnesses documented by punched-card technique
NPO-11249 B70-10091 09

Prediction of faults in components of machinery in motion
GSFC-10801 B70-10116 06

Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01

Communications link for SDS 900 series computers
NPO-11161 B70-10163 02

PERT "C"
M-FS-20164 B70-10184 09

Television camera as a scientific instrument
NPO-11164 B70-10209 03

Use of thermodynamic properties of metal-gas systems as low-pressure standards
LANGLEY-10452 B70-10223 03

Block-coded communications
NPO-11397 B70-10242 02

Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01

Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09

High speed television camera system processes photographic film data for digital computer analysis
NPO-10745 B70-10282 02

Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01

Concept for a distributed processor computer
ERC-10271 B70-10481 02

Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09

Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02

A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02

Information retrieval system
HQ-10426 B70-10556 09

Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01

A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09

Expanded sun-look angle program
MSC-13176 B70-10602 09

Simple data-smoothing and noise-suppression technique
M-FS-20803 B70-10627 06

Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09

Automatic, computerized testing of bolts
NPO-11090 B70-10657 06

Improved convolutional coding
MSC-13625 B70-10698 09

Systems of coding and their implementation
NPO-11469 B71-10006 09

Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01

Tracking antenna deformation program
GSFC-11191 B71-10017 09

Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04

AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09

Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09

Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02

Multi-dimensional real Fourier transform
NPO-11648 B71-10133 09

Quick response targeting program
M-FS-15157 B71-10147 09

Pattern recognition technique
NPO-11337 B71-10187 06

Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02

Fast carry accumulator design
M-FS-20902 B71-10274 01

Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06

Systems management techniques and problems
M-FS-21401 B71-10361 01

Television multiplexing system
KSC-10654 B71-10391 02

Principles of error detection and error correction codes
NPO-11487 B71-10408 02

Theory and application of feedback shift registers
NPO-11486 B71-10451 02

Wind trajectory tracing for air pollution studies (AIRPOL)
NPO-11892 B72-10072 09

Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09

Crystal-controlled multivibrator
NPO-11627 B72-10155 01

Graphite and boron-reinforced composite materials data summary
M-FS-21691 B72-10294 04

Redundant data management system
M-FS-21831 B72-10589 09

Significance arithmetic experimental package (SIGPAC)
GSFC-11499 B72-10600 09

Program for standard statistical distributions
M-FS-21466 B72-10602 09

Automatic computer subprogram selection from application-program libraries - ALTLIB
LANGLEY-11124 B72-10607 09

Vortex-lattice FORTRAN program for estimating subsonic aerodynamic characteristics of complex planforms
LANGLEY-11047 B72-10618 09

Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09

DATA RECORDERS

FORTRAN manpower account program
NPO-11973 B72-10623 09

Computer program to generate attitude error equations for a gimbaled platform
M-FS-21991 B72-10624 09

A system for automatic analysis of blood pressure data for digital computer entry
LEWIS-11751 B72-10632 05

An improved data transfer and storage technique for hybrid computation
M-FS-22043 B72-10680 02

Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G

MSC-11653 B72-10721 09

Binary concatenated coding system
JSC-14082 B73-10083 09

Simultaneous processing of vibration test data
NPO-11616 B73-10139 01

Processor for high-density digital tape-recorded signals
NPO-11399 B73-10354 02

Data-matched filter
JSC-14264 B73-10449 02

Stereoscopic computer graphics display system
M-FS-22322 B73-10526 09

Determination of bone mineral mass in vivo
MSC-14276 B75-10168 05

Fast Fourier transformation computer using fast counters
NPO-13110 B75-10175 02

Automated mass spectrometer/analysis system: A concept
NPO-13572 B75-10331 05

DATA PROCESSING EQUIPMENT

Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02

Improved feedback shift register
NPO-10351 B72-10226 01

Dual redundant core memory systems
MSC-13993 B72-10261 09

Memory reduction through higher level language hardware
M-FS-21128 B72-10350 09

Interferometer using RF switching matrix
GSFC-11051 B72-10462 01

High speed sequential decoder
ARC-10657 B72-10568 09

Source deck compression and update program (CAPS)
GSFC-11545 B72-10619 09

Data processor with conditionally supplied clock signals
GSFC-10975 B74-10021 02

Modular digital computer system design
M-FS-22935 B74-10034 09

Automated maintenance for complex hybrid systems
NPO-13143 B74-10279 09

High-speed fault-tolerant telemetry/computer interface
NPO-13139 B74-10296 02

A hybrid general-purpose bit synchronizer
MSC-14330 B75-10169 02

Computer/computer interface
NPO-13428 B75-10326 02

DATA RECORDERS

Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01

Testing device for verifying the performance of digital recorders
 KSC-10300 B70-10149 01
 Simple chamber facilitates chemiluminescent detection of bacteria
 LANGLEY-10705 B70-10525 05
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Digital decoder for phase-delay coded data
 GSFC-10894 B71-10345 01
 Technique minimizes the effects of dropouts on telemetry records
 NPO-11421 B72-10088 02
 Traveling digital counters for micrometers
 LANGLEY-11258 B73-10042 06
 Automatic PCM guard-band selector and calibrator
 KSC-10812 B73-10510 02
 Continuous detection of viable micro-organisms by chemiluminescence
 MSC-10170 B75-10170 05

DATA RECORDING

High precision cryogenic thermal conductivity standards
 NUC-10555 B70-10310 04
 New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06
 A method of numerically controlled machine part programming
 M-FS-15039 B70-10599 09
 Automatic reference level control for an antenna pattern recording system
 M-FS-20257 B71-10014 01
 Portable low-frequency vibration measuring and recording system
 LANGLEY-10543 B71-10126 02
 Automated preventive maintenance program
 GSFC-11408 B71-10500 09
 Very high speed direct-readout, control and recording system
 M-FS-20658 B72-10442 02
 High temperature permeameter for measuring magnetic properties
 LEWIS-11609 B72-10443 03
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09
 A new optical recording medium
 M-FS-22348 B73-10095 03
 An improved holographic recording medium
 M-FS-22532 B73-10166 09
 Sampling command generator corrects for noise and dropouts in recorded data
 NPO-11886 B73-10390 01
 Digital tape drive monitor
 GSFC-11925 B75-10153 02
 Read-only optical storage medium
 M-FS-23169 B75-10305 03
 Fast semiautomatic dimensional test set and data logger
 MSC-19554 B75-10322 07

DATA REDUCTION

Theory and application of Kalman filtering
 M-FS-20491 B70-10309 06
 Self testing and repairing computer - A concept
 NPO-10567 B70-10452 09
 Apparatus for simultaneous ion counting and current recording in mass spectrometry
 LEWIS-11103 B70-10471 03

New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06
 Comparison of aerodynamic noise from three nose-cylinder combinations
 M-FS-20816 B70-10690 03
 A report of advancements in structural dynamic technology resulting from Saturn 5 programs
 LANGLEY-10684 B70-10710 06
 Computer-controlled mass spectrometer for on-line gas analysis
 NPO-11427 B71-10191 03
 Variable sweep-rate shortens dynamic testing time
 LEWIS-11238 B71-10251 02
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09

A multielement probe for coincident temperature and pressure measurements
 LEWIS-11775 B72-10716 06
 Digital slope-threshold data compressor
 NPO-11630 B73-10355 02
 Data compression by a decreasing slope-threshold test
 NPO-10769 B73-10382 02
 Automated data acquisition and reduction system for torsional braid analyzer
 LANGLEY-11578 B75-10073 02
 Automated electronic system for measuring thermophysical properties
 LANGLEY-11883 B75-10160 03

DATA RETRIEVAL

Cost-reducing multipurpose microfilm card
 KSC-10508 B70-10071 03
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09
 Remote file inquiry (RFI) system
 KSC-10837 B75-10155 09

DATA SAMPLING

Errors in hybrid computers
 M-FS-21289 B72-10141 02
 Sampling command generator corrects for noise and dropouts in recorded data
 NPO-11886 B73-10390 01
 Anti-multipath digital signal detector
 LANGLEY-11379 B74-10137 02
 Computer/computer interface
 NPO-13428 B75-10326 02

DATA SMOOTHING

Simple data-smoothing and noise-suppression technique
 M-FS-20803 B70-10627 06
 Cubic spline functions for curve fitting
 LRL-10034 B72-10311 09

DATA STORAGE

Cost-reducing multipurpose microfilm card
 KSC-10508 B70-10071 03
 Prediction of faults in components of machinery in motion
 GSFC-10801 B70-10116 06
 Optically activated magnetic recording tape
 GSFC-10275 B70-10247 01
 Slide checkout console
 MSC-12318 B70-10290 02
 Two techniques for digital filter design
 M-FS-20015 B70-10314 01

Self testing and repairing computer - A concept
 NPO-10567 B70-10452 09
 Visual display panel functions as computer input/output device
 ERC-10223 B70-10476 01
 Disc pack cleaning table saves computer time
 LANGLEY-10590 B70-10532 09
 Electronic strain-level counter
 LANGLEY-10756 B70-10716 02
 Design and development of a fast scan infrared detection and measurement instrument
 M-FS-20749 B71-10022 03
 AUTOTEM - Automated geometry meshing and heat conduction calculation
 NUC-10241 B71-10039 09
 Automatic transmission line monitor
 KSC-10385 B71-10288 02
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Manpower management information system /MIS/
 M-FS-21477 B71-10431 09
 Automated preventive maintenance program
 GSFC-11408 B71-10500 09
 Dual redundant core memory systems
 MSC-13993 B72-10261 09
 Video information system
 M-FS-21711 B72-10267 09
 Vidicon storage tube electrical input/output
 MSC-14053 B72-10285 02
 A continuous physiological data collector
 M-FS-20835 B72-10402 05
 A simplified, compact static shift register
 HQ-10723 B72-10591 02
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09
 A visual-display and storage device
 GSFC-10901 B72-10647 02
 An improved data transfer and storage technique for hybrid computation
 M-FS-22043 B72-10680 02
 Fabrication of magnetic bubble memory overlay
 M-FS-22377 B73-10096 01
 Laser addressed holographic memory system
 M-FS-22565 B73-10155 03
 Bipotential monitoring with inexpensive office-type cassette recorders
 M-FS-22566 B73-10167 02
 Flexible format, computer accessed telemetry system
 NPO-11358 B73-10290 02
 Laser-actuated holographic storage device
 M-FS-22768 B73-10423 03
 Open coil structure for bubble-memory-device packaging
 LANGLEY-11704 B75-10219 01
 Variable-gap bias structure for magnetic bubble memory package
 LANGLEY-11765 B75-10221 01
 A 1-1/2-level on-chip-decoding bubble memory chip design
 LANGLEY-11766 B75-10222 01
 Read-only optical storage medium
 M-FS-23169 B75-10305 03

DATA SYSTEMS

Data acquisition from high-speed rotating shafts
 LEWIS-10886 B70-10043 01
 Communications link for SDS 900 series computers
 NPO-11161 B70-10163 02
 Uniform data system standardizes technical computations and the purchasing of commercially important gases
 NUC-10549 B70-10333 04
 Directional coupler for optical waveguides
 ERC-10094 B70-10381 03
 Visual display panel functions as computer input/output device
 ERC-10223 B70-10476 01
 Circuit suppresses spurious sidebands
 MSC-13425 B70-10541 01
 Reliability Analysis Model
 M-FS-14513 B70-10614 09
 Microprogram scheme for automatic recovery from computer error
 MSC-13387 B70-10642 09
 Digital simulation error curves for a spring-mass-damper system
 M-FS-20770 B71-10003 09
 Fiscal output data produce versatile graphic-numeric charts
 NUC-10394 B71-10108 09
 Data sampling system for monitor and control station
 M-FS-20948 B71-10299 02
 Self-synchronizing, bi-orthogonal coded PCM telemetry system
 GSFC-11237 B71-10324 02
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
 Voter comparator switch provides fail safe data communications system - A concept
 MSC-13932 B71-10504 02
 Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03
 Circuit permits independent adjustment of gain and offset at constant input impedance
 ARC-10348 B72-10057 01
 Prediction of ducted fan performance
 ARC-10615 B72-10064 09
 Wind trajectory tracing for air pollution studies (AIRPOL)
 NPO-11892 B72-10072 09
 Dual redundant core memory systems
 MSC-13993 B72-10261 09
 Very high speed direct-readout, control and recording system
 M-FS-20658 B72-10442 02
 High speed sequential decoder
 ARC-10657 B72-10568 09
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09
 Method for nonlinear exponential regression analysis
 M-FS-21965 B72-10622 09
 Interface control scheme for computer high-speed interface unit
 M-FS-23083 B75-10036 01
 Automated electronic system for measuring thermophysical properties
 LANGLEY-11883 B75-10160 03

Microbial load monitor
 MSC-14062 B75-10167 05
 A 1-1/2-level on-chip-decoding bubble memory chip design
 LANGLEY-11766 B75-10222 01
 Multispectral data analysis: LARSYS III
 MSC-14823 B75-10235 03
DATA TRANSMISSION
 Block encoders for Reed-Muller codes
 NPO-10629 B70-10051 01
 Signal phase switches offer greater dynamic range
 NPO-10709 B70-10393 01
 Elimination of redundancy in telemetered data
 HQ-10585 B70-10431 06
 Concept for high speed computer printer
 KSC-10373 B70-10484 09
 COPTRAN - A method of optimum communication systems design
 ERC-10273 B70-10501 09
 Constant current load matches impedances of electronic components
 GSFC-10982 B70-10643 01
 Improved convolutional coding
 MSC-13625 B70-10698 09
 An improved telemetry system
 ARC-10336 B71-10201 01
 A pseudo random-access synchronous meteorological satellite system
 GSFC-10895 B71-10220 02
 High efficiency telemetry method
 NPO-10388 B71-10371 02
 Composite antenna feed system operates from VHF to X-band
 GSFC-11046 B71-10410 02
 Very high speed direct-readout, control and recording system
 M-FS-20658 B72-10442 02
 An improved learning decoder
 MSC-14070 B72-10573 02
 Redundant data management system
 M-FS-21831 B72-10589 09
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09
 Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
 M-FS-21212 B72-10665 03
 Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
 GSFC-11523 B72-10675 09
 An improved data transfer and storage technique for hybrid computation
 M-FS-22043 B72-10680 02
 Pre-emphasis determination for an S-band constant bandwidth FM/FM station
 M-FS-22135 B73-10170 02
 Data multiplexer using a tree switch
 NPO-11333 B73-10289 02
 Digital slope-threshold data compressor
 NPO-11630 B73-10355 02
 Data compression by a decreasing slope-threshold test
 NPO-10769 B73-10382 02
 Digital transmitter for data bus communications system
 JSC-14558 B73-10511 02
 Time-control system for communication between data-collection and orbiting
 GSFC-11182 B74-10088 02

Buffer control unit for computer communications
 ARC-10870 B75-10059 02
 High-speed data word monitor
 ARC-10899 B75-10129 02
 System for simultaneous, bidirectional data transmission
 MSC-14810 B75-10171 01
 Generation of key in cryptographic system for secure communications
 NPO-13451 B75-10278 09
 Synchronizer for random binary data
 NPO-13286 B75-10325 02
 Computer/computer interface
 NPO-13428 B75-10326 02
DC 8 AIRCRAFT
 Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
DEACTIVATION
 Attitude controls for VTOL aircraft
 XAC-8972 B71-10202 05
DEAD RECKONING
 A simple dead-reckoning navigational system
 M-FS-21165 B72-10409 02
DEBRIS
 Self-sealing propellant-actuated device eliminates atmosphere contamination
 NPO-11013 B70-10248 07
 Dropouts in magnetic tape recording and reproduction
 NPO-11519 B71-10160 03
 Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 B71-10475 05
DECAY RATES
 Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay
 ARG-10281 B70-10608 03
 Optical probing of supersonic aerodynamic turbulence
 M-FS-20686 B70-10665 03
DECELERATION
 Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
 LEWIS-11270 B72-10546 06
 Seat belt restraint system
 ARC-10519 B72-10692 06
DECIMAL TO BINARY CONVERTERS
 Rapid method for interconversion of binary and decimal numbers
 ARC-10159 B70-10496 09
DECIMALS
 Pentat circuit may be used in conversionless decimal counter
 HQ-10146 B70-10336 01
 Standardized Pearson type 3 density function area tables
 M-FS-20541 B71-10205 02
DECISION MAKING
 Integrated multi-path program analysis and cost technique (IMPACT)
 M-FS-21880 B72-10676 09
 GREMEX update (Goddard research engineering management exercise)
 GSFC-11512 B73-10162 09
 Safety management of a complex R&D ground operating system
 LEWIS-12559 B75-10241 07
DECISION THEORY
 Calibration-interval adjustment indicator - A concept
 M-FS-18693 B71-10309 01

DECODERS

- Integrated circuit random-access memory decoder
 ERC-10211 B70-10372 01
 Bimorph piezoelectric device functions as flapper valve
 ERC-10082 B70-10382 01
 Digital decoder for phase-delay coded data
 GSFC-10894 B71-10345 01
 Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
 High speed sequential decoder
 ARC-10657 B72-10568 09
 An improved learning decoder
 MSC-14070 B72-10573 02
 One-dimensional multimode and multistate oscillator: A concept
 HQ-10851 B75-10088 01
 A 1-1/2-level on-chip-decoding bubble memory chip design
 LANGLEY-11766 B75-10222 01
- DECODING**
 Rapid method for interconversion of binary and decimal numbers
 ARC-10159 B70-10496 09
 Improved convolutional coding
 MSC-13625 B70-10698 09
 Systems of coding and their implementation
 NPO-11469 B71-10006 09
 High-speed digital plotter
 ARG-90001 B71-10049 02
 A frequency division multiplex technique for transmitting commands
 KSC-10521 B71-10169 02
 An improved telemetry system
 ARC-10336 B71-10201 01
 Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 Four-phase differential phase shift resolver
 JSC-14065 B73-10093 02
 Synchronous ten-megabit biphase detector
 M-FS-22546 B73-10323 02
 Techniques for decoding speech phonemes and sounds: A concept
 GSFC-11898 B75-10086 02
 A hybrid general-purpose bit synchronizer
 MSC-14330 B75-10169 02
- DECOMMUTATORS**
 Three-phase dc motor decoder
 GSFC-11824 B75-10247 02
- DECOMPOSITION**
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 B71-10096 05
 Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
 MSC-17153 B71-10097 04
 Statistical characterization of phenolic-novolac structures
 ARC-10393 B71-10255 04
 Catalyst for sodium chlorate decomposition
 ARC-10584 B72-10305 04
 Chemical kinetics computer program for static and flow reactions
 LEWIS-11467 B72-10580 04
 Continuous catalytic decomposition of methane
 ARC-10339 B73-10016 03

- Catalytic reactor with disposable cartridge
 ARC-10747 B73-10376 04
- DECOMPRESSION SICKNESS**
 An efficient prebreathing apparatus for humans during decompression
 MSC-14151 B72-10690 05
- DECONTAMINATION**
 Effects of decontamination, sterilization, and thermal vacuum on polymeric products
 NPO-11250 B70-10208 04
 Self-sealing propellant-actuated device eliminates atmosphere contamination
 NPO-11013 B70-10248 07
 Biological handbook for engineers
 M-FS-20349 B70-10255 05
 Elimination of gases and contamination from water
 KSC-10502 B70-10456 05
 Evaluation of polymeric products for use in thermal-vacuum environment
 NPO-11288 B70-10612 04
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 B71-10096 05
 Microbial burden prediction model program
 NPO-11709 B71-10401 09
 Exothermic brazing units
 M-FS-21435 B71-10467 08
 Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 B71-10475 05
 Purification of contaminated water by filtration through porous glass
 ARC-10655 B72-10412 04
 Polymers used to absorb fats and oils: A concept
 NPO-11609 B74-10210 05
 Diffusion pump modification promotes self-cleansing and high efficiency
 LEWIS-12323 B75-10065 06
- DEEP SPACE INSTRUMENTATION FACILITY**
 DSIF station schedules
 NPO-11547 B71-10243 09
- DEEP SPACE NETWORK**
 Deep space network
 NPO-11562 B72-10043 01
 Accurate measurement of telemetry performance
 NPO-11457 B72-10089 02
 Improved noise-adding radiometer for microwave receivers
 NPO-11706 B73-10345 02
 Probes for measuring noise current in an electronic cable
 NPO-13123 B73-10454 02
- DEFECTS**
 Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
 M-FS-20561 B70-10012 06
 Ultrasonic detection of flaws in fusion butt welds
 M-FS-20824 B70-10514 08
 Electronic flaw simulator for eddy current probe calibration
 NUC-10211 B70-10533 01
 Effect of size on cracking of materials
 NPO-11602 B71-10158 04
 Analytical procedure for estimating reliability of randomly excited structures
 NPO-11618 B71-10189 06
 Interpretation of aluminum-alloy weld radiography
 M-FS-20943 B71-10206 08

- Automatic cross-sectioning and monitoring system locates defects in electronic devices
 GSFC-11221 B71-10221 01
 Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 B71-10226 02
 Ultrasonic scanning system for in-place inspection of brazed-tube joints
 M-FS-21166 B71-10227 06
 Noise diffraction patterns eliminated in coherent optical systems
 GSFC-11133 B71-10236 03
 Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06
 Flat conductor cable handbook
 M-FS-21009 B71-10379 01
 Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
 MSC-13995 B71-10413 09
 Nondestructive-test standards for evaluation of fiber-reinforced composites
 M-FS-21288 B72-10157 04
 Repeatable method of thermal stress fracture test of brittle materials
 NUC-11019 B72-10258 06
 Simple non-destructive tests for electroexplosive devices
 NPO-11563 B72-10315 01
 Improved optical filters for automated visual inspection
 HQ-10720 B72-10521 03
 Guidebook of nondestructive evaluation techniques for materials and structures
 LEWIS-12272 B74-10122 04
- DEFLAGRATION**
 An unconfined, large-volume hydrogen/air explosion
 NUC-11000 B71-10041 03
 Improved plasma accelerator
 ARC-10109 B71-10454 03
- DEFLECTION**
 Stress corrosion cracking evaluation of precipitation-hardening stainless steel
 M-FS-20667 B70-10140 04
 Hoop restraint on beam-column behavior in a stiffened cylindrical shell
 M-FS-16172 B70-10394 06
 Adjustable support spring
 ARC-10203 B70-10636 07
 ELAS8 - Computer program for linear structure equilibrium problems
 NPO-11555 B71-10185 09
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Laser vibration analyzer
 XAC-01670 B71-10249 03
 Optical probing of supersonic flows with statistical correlation
 M-FS-20642 B71-10252 03
 Phase locking of field sequential color wheel for small TV camera
 MSC-13857 B71-10326 02
 Structural behavior of tapered inflated fabric cylinders under various loading conditions
 MSC-15317 B71-10327 06
 Laser net - A concept for monitoring wingtip vortices on runways
 M-FS-20857 B71-10360 02
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Device for measuring electric fields
 ARC-10164 B72-10148 03

- Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03
- Noncontact torque measurement using stroboscopic techniques
MSC-12282 B72-10332 07
- Laser beam deflection control: A concept
MSC-13814 B72-10411 02
- Analytical failure determination of flow-induced fatigue in bellows
M-FS-18178 B72-10488 06
- Laser system detects tower deflections
LEWIS-11870 B73-10243 02
- DEFLECTORS**
- Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03
- Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
- Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
- Acoustic-optic deflector telescope
M-FS-23107 B74-10293 03
- DEFORMATION**
- Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
- High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
- Dropouts in magnetic tape recording and reproduction
NPO-11519 B71-10160 03
- Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
- Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
- Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07
- Velocity accelerator for particles
NPO-11349 B72-10082 03
- Joining precipitation-hardened nickel-base alloys by friction welding
LEWIS-11514 B72-10288 08
- Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03
- Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09
- Design standards for low-profile flanges
M-FS-22708 B74-10033 09
- DEFORMETERS**
- Bileaf mechanical strain gage
ARC-10303 B72-10197 07
- DEFROSTING**
- Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
- DEGASSING**
- Sorption vacuum trap
ERC-90051 B70-10449 06
- Elimination of gases and contamination from water
KSC-10502 B70-10456 05
- Water cavity degasser for electrolysis cells
ARC-10244 B72-10246 03
- Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
- Two-phase, passive separator-and-filter assembly
LANGLEY-10976 B74-10133 04
- DEGRADATION**
- Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
- An improvement in blackbody cavity design
LANGLEY-10292 B70-10711 03
- Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
- Improved thermal paint formulation
M-FS-14706 B71-10180 03
- Predicting service life margins
M-FS-24015 B71-10194 06
- Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
- Environmental effects on silicon solar cells
NPO-11475 B71-10282 02
- Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 B71-10375 08
- High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04
- Improved elastomer for use with oxygen difluoride
ARC-10528 B72-10027 04
- Sheet plastic filters for solar cells
NPO-11464 B72-10090 04
- Trace contaminant adsorption and sorbent regeneration in closed ecological systems
LANGLEY-10681 B72-10328 04
- Study of in-situ degradation of thermal control surfaces
M-FS-20892 B72-10336 04
- Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
- Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04
- DEGREES OF FREEDOM**
- Electronic scanning of 2-channel monopulse patterns
GSFC-10299 B70-10485 02
- Separation of two bodies in space
NPO-10663 B70-10625 09
- Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07
- ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
- Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
- Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
- Frame modal analysis
MSC-17562 B71-10414 09
- Virtual-image display system for flight simulators
ARC-10175 B71-10427 03
- Reduction of fan noise: A concept
ARC-10312 B72-10040 06
- Universal inverted flexure
ARC-10345 B72-10122 07
- Space suit may have orthotic applications
ARC-10275 B72-10297 05
- A proposed remote manipulator system: A concept
MSC-14245 B72-10733 06
- DEHUMIDIFICATION**
- Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
- Aircrew oxygen system
ARC-10247 B72-10195 05
- Solid amine compounds as sorbents for carbon dioxide: A concept
ARC-10571 B72-10421 04
- DEHYDRATED FOOD**
- Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
- Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05
- Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05
- Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
- Preservation of flavor in freeze dried green beans
JSC-14149 B73-10092 05
- Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
- Control of nonenzymatic browning in intermediate-moisture foods
MSC-14835 B75-10317 05
- DEHYDRATION**
- New method for photoresist stripping
ERC-10239 B70-10497 04
- Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05
- Microorganism sample device
LANGLEY-10258 B71-10487 05
- Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
- Preservation of flavor in freeze dried green beans
JSC-14149 B73-10092 05
- DEICERS**
- Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 B75-10282 06
- DEIONIZATION**
- Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
- DELAMINATING**
- Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06
- Environmental effects on silicon solar cells
NPO-11475 B71-10282 02
- DELAY**
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03

DELAY CIRCUITS

Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
Third order digital-to-analog converter
MSC-12458 B72-10030 02

DELAY LINES

Two techniques for digital filter design
M-FS-20015 B70-10314 01
Solid state variable time delay
ERC-10032 B70-10492 01
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02

DELINEATION

Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04

DELTA ANTENNAS

Improved modified turnstile antenna
MSC-12209 B70-10482 01

DELTA FUNCTION

Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04

DELTA MODULATION

Fill-in binary loop pulse-torque quantizer
M-FS-23100 B75-10037 02

DEMAGNETIZATION

Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03

DEMODULATION

Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Antenna-array, phase quadrature tracking system
MSC-12205 B70-10095 02
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
Signal phase switches offer greater dynamic range
NPO-10709 B70-10393 01
Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Accurate measurement of telemetry performance
NPO-11457 B72-10089 02
Differential input preamplifier
ARC-10489 B72-10165 01
Four-phase differential phase shift resolver
JSC-14065 B73-10093 02
Carrier extraction circuit
JSC-14262 B73-10094 02
A technique to eliminate false lock in PCM demodulation
JSC-12494 B73-10106 02
Phase shift keyed, pulse code modulated signal synchronizer
JSC-12462 B73-10107 02

A hybrid general-purpose bit synchronizer
MSC-14330 B75-10169 02

DEMODULATORS

Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02
Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
An improved telemetry system
ARC-10336 B71-10201 01
Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05
Data-aided carrier tracking loops
NPO-11282 B73-10356 01

DENDRITIC CRYSTALS

Improved alkaline electrochemical cell
GSFC-10792 B70-10153 01
Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02
Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04

DENSIFICATION

Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Fabrication of large ceramic electrolyte disks
ARC-10320 B72-10202 03
Densification of powder metallurgy billets by a roll consolidation technique
LEWIS-11395 B73-10040 08

DENSITOMETERS

Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Ultrasonic bone densitometer
M-FS-20994 B72-10450 05
Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02

DENSITY

Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Fabrication of large ceramic electrolyte disks
ARC-10320 B72-10202 03

DENSITY (MASS/VOLUME)

Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04
Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
Volumetric calibration of a propellant utilization system
M-FS-14943 B70-10156 06
Open-celled polyurethane foam
KSC-10517 B70-10349 04
A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04

Thermal conductivity of gaseous and liquid hydrogen
NUC-10558 B71-10105 04
CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09
Method for determining failure potential of pressure vessels
M-FS-20564 B71-10270 06
Viscoelastic cushion for patient support
MSC-12447 B71-10316 05
An economical vent cover
M-FS-20692 B72-10348 07
Ultrasonic bone densitometer
M-FS-20994 B72-10450 05
Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02
Boron-10 loaded inorganic shielding material
M-FS-22280 B72-10740 04

DENSITY DISTRIBUTION

Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09

DENSITY MEASUREMENT

Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 B71-10492 09
Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02

DENTISTRY

New tooth enamel from brushite crystals
ERC-10338 B74-10199 05

DEOXYGENATION

Gettering capsule for removing oxygen from liquid lithium systems
LEWIS-11509 B73-10002 04

DEPENDENT VARIABLES

Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09

DEPLETION

Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
MSC-17153 B71-10097 04
Multiloop distributed RC active networks
ARC-10200 B71-10177 01

DEPLOYMENT

High-reliability release mechanism
LEWIS-11233 B71-10080 07
Stable, inflatable life raft for high seas rescue operations
MSC-12393 B71-10167 05
Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02

DEPOLARIZATION

High energy density electrochemical cell
LEWIS-10969 B70-10151 01

DEPOLYMERIZATION

Dielectric films improve life of polymeric insulators

ARC-10892 B75-10084 04

DEPOSITION

Tensile creep-rate of pyrolytic carbon NPO-11254 B70-10100 04

Technique for depositing silicon dioxide on indium arsenide improves adhesion

ERC-10130 B70-10475 04

Extended-life magnetic recording heads GSFC-10097 B70-10521 01

Dual-wavelength system monitors deposition of films - A concept

M-FS-20675 B70-10658 03

Fabrication of large tungsten structures by chemical vapor deposition

LEWIS-11239 B71-10212 08

Plating by glass-bead peening

GSFC-11163 B71-10256 08

Improved brazing technique for pyrolytic graphite

NPO-12026 B71-10293 08

Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor

GSFC-10835 B71-10375 08

High-strength carbon-base fibers

LEWIS-11167 B71-10403 04

Shielding method for polycrystalline and epitaxy growths

M-FS-20162 B71-10434 04

Isotropic pyrolytic carbons

ARC-10532 B72-10029 04

Fabrication of thick structures by sputtering

LEWIS-12331 B74-10126 08

Depositing spacing layers on magnetic film with liquid phase epitaxy

LANGLEY-11528 B74-10262 01

Improved multiple-target sputtering equipment

NPO-13345 B75-10178 04

DEPRECIATION

Computer program for discounted cash flow/rate of return evaluations

M-FS-19040 B71-10377 09

DEPTH MEASUREMENT

Water surface depth instrument

LANGLEY-10576 B70-10103 07

Thin spray film thickness measuring technique

M-FS-20842 B71-10062 08

Fracture mechanics evaluation of Ti-6Al-4V pressure vessels

MSC-13995 B71-10413 09

A simple, accurate depth check gauge

JSC-17166 B73-10150 06

DERIVATION

Technique for Evaluating Multiple Probability Occurrences /TEMPO/

M-FS-14333 B70-10626 06

DESALINIZATION

Stabilization of porous glass reverse-osmosis membranes

ARC-10646 B72-10309 04

DESCALING

Welded polypropylene liners for large descaling tanks

M-FS-18711 B71-10012 07

Removal of ice and marine growth from ship surfaces: A concept

NPO-13658 B75-10282 06

DESCENT

Emergency descent device

M-FS-23074 B74-10226 05

DESERTS

Microflora in soils of desert regions

NPO-11215 B70-10253 05

DESICCATORS

Self-regenerating desiccant system

M-FS-23057 B74-10266 07

DESIGN

Theory and application of Kalman filtering

M-FS-20491 B70-10309 06

Optimum structural design based on reliability analysis

NPO-11261 B70-10399 06

Improved reinforcement for openings in difficult fabrics

MSC-13554 B70-10489 08

Metal-to-ceramic seals - A literature survey

NPO-11430 B71-10116 08

Flat conductor cable handbook

M-FS-21009 B71-10379 01

DESORPTION

Adhesion theory review

AEC-10083 B72-10231 04

DESTRUCTIVE TESTS

Strain compatibility tests for sprayed foam cryogenic insulation

M-FS-16063 B70-10423 04

Accurate reassembly of small broken test specimens

M-FS-16730 B70-10455 07

Accelerated battery-life testing - A concept

GSFC-11085 B71-10348 06

Economical technique for fragmentation testing

ARC-10792 B74-10052 04

Apparatus for monitoring linear explosive performance

LANGLEY-10800 B74-10201 04

High-temperature tensile tester for ceramics

ARC-10822 B74-10244 04

Biaxial compression test technique

MSC-14883 B75-10319 08

DETECTION

Mass spectrometer detects high molecular weight components

HQ-10477 B70-10057 01

Analysis and optimization of an omnidirectional direction-finding system

M-FS-14346 B70-10112 02

Burst synchronization detection system

MSC-90317 B70-10159 02

Electronic position indicator for latching solenoid valves

LEWIS-10926 B70-10174 01

Two-axis flux gate magnetometer

GSFC-10441 B70-10345 01

COPTRAN - A method of optimum communication systems design

ERC-10273 B70-10501 09

Metal detector system

ARC-10265 B70-10511 01

Ultrasonic detection of flaws in fusion butt welds

M-FS-20824 B70-10514 08

Submersed sensing electrode used in fuel-cell type hydrogen detector

M-FS-14655 B71-10071 01

Locating tube blockage that X-ray cannot detect

NUC-10386 B71-10129 06

Sensitive gaseous hydrogen detection system

M-FS-21161 B71-10209 04

Atmospheric pollution measurement by optical cross correlation methods - A concept

M-FS-12078 B71-10224 02

Device measures conductivity and velocity of ionized gas streams

XAC-05695 B71-10235 03

Fast carry accumulator design

M-FS-20902 B71-10274 01

Microwave biasing improves detector response in the infrared region

GSFC-11050 B71-10313 01

Improved smoke generator for low-speed wind tunnels

LANGLEY-10885 B71-10337 06

Planet geometric center tracker

ARC-10084 B71-10445 02

Apparatus tests flexural durability of FCC

M-FS-20113 B71-10458 08

Optimized techniques and requirements for computer improvement of structural weld radiographs

M-FS-21627 B71-10492 09

Remote sensing X-ray spectrometer

MSC-13978 B72-10016 03

Sensitive holographic detection of small aerodynamic perturbations

ARC-10422 B72-10209 03

Laboratory leak tester provides high sensitivity

AEC-10042 B72-10240 03

Lightning flash detection system

ARC-10562 B72-10272 02

Bacterial contamination monitor

GSFC-10879 B73-10222 05

Detection of cracks in surface insulation

MSC-14187 B74-10095 04

Wavelength-selective, sequential Q-switching laser cavity

LANGLEY-11045 B74-10134 03

Negative ion spectrometry for detecting nitrated explosives

NPO-13082 B74-10276 02

DC-to-AC inverter ratio failure detector

NPO-13160 B74-10282 01

Micrometeoroid composition analyzer

GSFC-11892 B74-10287 01

Infrared tunable laser: A concept

ARC-10463 B75-10081 03

Microbial load monitor

MSC-14062 B75-10167 05

Continuous detection of viable micro-organisms by chemiluminescence

MSC-10170 B75-10170 05

DETECTORS

Detection and location of metal fragments in the human body

M-FS-14797 B70-10107 05

Volumetric calibration of a propellant utilization system

M-FS-14943 B70-10156 06

Control system for an artificial heart

LEWIS-11057 B70-10469 05

Electronic strain-level counter

LANGLEY-10756 B70-10716 02

Radiant energy absorption enhancement in optical imaging systems

ARC-10194 B71-10112 03

Hybrid redundancy system for improving reliability - A concept

NPO-11546 B71-10132 01

Improved relay chatter detector

NPO-10355 B71-10292 01

Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 B71-10475 05
 Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09
 Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
 A reliable liquid helium detector
LEWIS-11487 B72-10145 01
 Two-axis leveling detector system
M-FS-21344 B72-10392 02
 Wide-range nuclear magnetic resonance detector
LEWIS-11513 B72-10478 03
 A magnetic mouse activity meter
HQ-10664 B72-10482 05
 Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
 An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08
 Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02
 Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02
 Short-range laser obstacle detector
NPO-11856 B74-10101 03

DETERGENTS
 Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04

DETERIORATION
 Improved ultraviolet resonance lamp
ARC-10030 B70-10237 01
 Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
 Limited life item management
M-FS-24020 B71-10196 06
 Technique for in-place welding of aluminum backed up by a combustible material
LEWIS-11328 B71-10257 08
 The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05

DETONABLE GAS MIXTURES
 An explosion-proof battery case
MSC-12335 B70-10304 01

DETONATION
 Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
 Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04
 Explosive cord
M-FS-21928 B72-10293 08
 Laser system to detonate explosive devices
NPO-11743 B74-10194 03
 Start/stop switches for testing detonation velocity of explosives
KSC-10793 B75-10255 01

DETONATION WAVES
 Velocity accelerator for particles
NPO-11349 B72-10082 03

DETONATORS
 Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04

Apparatus for monitoring linear explosive performance
LANGLEY-10800 B74-10201 04

DEUTERIUM
 Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03
 Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
 Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04

DEUTERONS
 Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 B74-10063 03
 A high yield neutron target
LEWIS-12058 B74-10066 03

DEW
 Psychrometric chart for physiological research
ARC-10394 B71-10470 03

DEXTRANS
 Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05

DIAGNOSIS
 Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02
 An efficient, simple dialyzer
HQ-10741 B72-10522 05
 Low-cost coding techniques for digital fault diagnosis
NPO-11701 B73-10344 09
 Automated single-slide staining system
LANGLEY-11649 B74-10188 05
 Automated drug identification system
NPO-13063 B74-10213 05

DIAGRAMS
 Systems of coding and their implementation
NPO-11469 B71-10006 09
 Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09
 Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
 Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
 Reliability computation from reliability block diagrams
NPO-13304 B75-10276 07

DIALS
 Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
 Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07
 An improved aesthesiometer
MSC-13609 B72-10032 05
 Overlay board for control consoles
ARC-10007 B72-10191 02
 Bileaf mechanical strain gage
ARC-10303 B72-10197 07

DIALYSIS
 Small, low cost, artificial kidney
AEC-10011 B72-10371 05
 An efficient, simple dialyzer
HQ-10741 B72-10522 05

Automated method for study of drug metabolism
ARC-10469 B73-10030 04
 Improved ion exchange membrane
NPO-13309 B75-10117 04
 New urea-absorbing polymers for artificial kidney machines
NPO-13620 B75-10336 04

DIAMETERS
 Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
 Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
 Nondestructive measurement of capillary tube internal diameter
LANGLEY-11647 B75-10156 02

DIAMINES
 Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
 Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
 Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04
 Diamine curing agents for polyurethanes
LANGLEY-11829 B75-10261 08

DIAMONDS
 Phenolic cutter for machining foam insulation
M-FS-14170 B70-10089 07
 Surface treatment for valve seats
NPO-10779 B70-10202 08
 Synthesis of diamonds
M-FS-20698 B70-10513 08
 Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07
 Cutting thin sections of bone
ARC-10555 B72-10303 05
 Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04
 Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
MSC-14247 B72-10616 08

DIAPHRAGMS
 Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
 Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06

DIAPHRAGMS (MECHANICS)
 Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
 An electrothermally actuated micro valve
NPO-10730 B70-10171 07
 Liquid level sensor
M-FS-16648 B70-10219 01
 Improved burst disk/cutter assembly
KSC-10516 B70-10583 07
 Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07
 TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07
 Gage for measuring coastal erosion and sedimentation
LANGLEY-10779 B70-10629 01

SUBJECT INDEX

Low leak rate poppet-and-seat check valve
 MSC-13587 B70-10688 07
 Inertia diaphragm pressure transducer
 XAC-2981 B71-10200 05
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Modified camera records lens settings on film
 MSC-12363 B71-10494 03
 Electrodynamical actuators for rocket engine valves
 ARC-10486 B72-10009 06
 Hermetic isolation valves
 ARC-10505 B72-10013 06
 Improved elastomer for use with oxygen difluoride
 ARC-10528 B72-10027 04
 Use of thin plastic films at cryogenic temperatures
 LEWIS-11047 B72-10038 04
 Nematic liquid crystals for optical shutters: A concept
 NPO-11367 B72-10083 03
 Counter lung
 ARC-10248 B72-10219 05
 Improved high-performance shock tube
 NPO-11885 B72-10242 03
 Rapid evaluation of reverse-osmosis membranes
 ARC-10659 B72-10413 04
 Constant tension device for gravity simulation
 M-FS-21618 B72-10466 06
 Parallel-plate viscometer
 NPO-11387 B72-10700 03
 Embossed metal diaphragm has two-way stretch
 NPO-11635 B73-10298 08

DIASTOLE
 A system for the automatic measurement and digital display of systolic and diastolic blood pressures
 MSC-13227 B71-10329 05

DIATOMIC GASES
 Nondispersive infrared analyzer for specific gases in complex mixtures
 ARC-10308 B72-10198 03
 Diatomic infrared gasdynamic laser permits selection of wavelengths
 ARC-10370 B72-10206 03

DIBORANE
 Precision control system for engine fuel
 NPO-12017 B70-10244 07
 Oxygen carrier for gas chromatographic analysis of inert gases in propellants
 ARC-10574 B72-10249 04
 Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
 ARC-10558 B72-10276 03

DICHROISM
 Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03
 Low-loss, circularly-polarized dichroic plate
 NPO-13171 B74-10283 01

DIELECTRIC POLARIZATION
 Piezoelectric relay
 GSFC-11627 B74-10089 01

DIELECTRIC PROPERTIES
 Properties of nonaqueous electrolytes
 LEWIS-11017 B70-10080 04

Effects of decontamination, sterilization, and thermal vacuum on polymeric products
 NPO-11250 B70-10208 04
 Growing single crystals in silica gel
 ERC-10306 B70-10479 02
 Swept-frequency UHF radiometer for deep probes of earth - A concept
 MSC-13428 B70-10617 02
 Protective encapsulation of implantable biotelemetry units
 ARC-10514 B72-10301 05
 Frequency-wavelength calculator with table of dielectric properties
 GSFC-11200 B72-10472 03
 Dielectric films improve life of polymeric insulators
 ARC-10892 B75-10084 04

DIELECTRICS
 Economical weatherproof helical antenna
 XKS-08485 B70-10016 01
 Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01
 Thermoelectric radiometer
 ARC-10138 B70-10056 02
 Volumetric calibration of a propellant utilization system
 M-FS-14943 B70-10156 06
 Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Technique for producing bipolar and MOS field effect transistors on a single chip
 MSC-13358 B70-10218 01
 Directional coupler for optical waveguides
 ERC-10094 B70-10381 03
 Quasi-optical equivalent of waveguide slide screw tuner
 ERC-10312 B70-10384 01
 Nonequal iteration directional filters permit selective clearance of ripples in passband circuits
 ERC-10313 B70-10385 01
 Heat-rejection windows for telescopes
 M-FS-20634 B70-10386 04
 Discrete-component S-band power amplifier
 GSFC-11248 B71-10365 01
 Shielding method for polycrystalline and epitaxy growths
 M-FS-20162 B71-10434 04
 Laser device provides accurate reference to true gravitational vertical
 ARC-10444 B71-10479 07
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Gate protective device for insulated gate field-effect transistors
 M-FS-21626 B72-10149 01
 Improved high voltage insulator for use in vacuum
 LEWIS-11401 B72-10181 01
 Liquid-helium-cooled Michelson interferometer
 ARC-10554 B72-10217 03
 An electrohydrodynamic heat pipe
 ARC-10601 B72-10251 03
 High voltage electrical insulation coating for refractory materials
 LEWIS-11479 B72-10290 04

DIFFERENTIAL AMPLIFIERS

Transmission of optical frequencies with minimal losses
 HQ-10541 B72-10389 03
 Frequency-wavelength calculator with table of dielectric properties
 GSFC-11200 B72-10472 03
 Novel dielectric reduces corona breakdown in ac capacitors
 M-FS-21486 B72-10505 01
 Insulated ECG electrodes
 JSC-14339 B73-10220 05
 High voltage solid-state relay
 LEWIS-12096 B74-10006 01
 Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04
 Measurement of trap density in dielectric film
 NPO-13443 B75-10204 02

DIENES
 Process for synthesizing a new series of fluorocarbon polymers
 NPO-10862 B70-10453 04

DIES
 Lightweight, high-strength, reinforced plastic tube-framing die
 LANGLEY-10126 B70-10273 04
 Fiberglass honeycomb elements formed quickly and cheaply
 LANGLEY-10125 B70-10342 08
 Test fixture insures high degree of accuracy in flexure tests
 NUC-10246 B70-10358 07
 Low-cost quasi-parabolic antenna
 LEWIS-11291 B71-10121 01
 Precision die-punch for trimming the conductors of flat conductor cable
 M-FS-20142 B71-10419 08
 Multiedge slitter for FCC
 M-FS-20112 B71-10457 08
 Hydraulic expansion process shapes large metal sheets
 MSC-12432 B71-10511 07

DIETS
 Metabolic balance analysis program
 M-FS-21237 B71-10384 09
 Potassium food supplement
 JSC-14391 B73-10177 05

DIFFERENCE EQUATIONS
 Error compensation for hybrid-computer solution of linear differential equations
 ERC-10262 B70-10446 09

DIFFERENTIAL AMPLIFIERS
 Constant current source for converting absolute temperatures to analog voltages
 NPO-10733 B70-10164 02
 Liquid level sensor
 M-FS-16648 B70-10219 01
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Design of hysteresis circuits using differential amplifiers
 ARC-10070 B71-10162 01
 A differential ECG amplifier with single-ended output
 ARC-10411 B72-10061 05
 Stable photosensor amplifiers
 NPO-11561 B72-10100 01
 Differential input preamplifier
 ARC-10489 B72-10165 01
 Integrable power gyrator
 M-FS-22342 B73-10159 02
 Gyrator circuit using field effect transistors
 M-FS-21433 B73-10161 02

DIFFERENTIAL EQUATIONS

- A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05
- The use of the chatter mode in self-adaptive systems
HQ-10159 B70-10274 06
- Method of statistical filtering
MSC-13493 B70-10427 06
- Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09
- The determination of stability domains for nonlinear dynamical systems
M-FS-14832 B70-10539 03
- Global search algorithm for optimal control
ARC-10359 B70-10637 09
- Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
- Numerical integration of second order differential equations
M-FS-20536 B71-10186 09
- Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09
- Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03
- Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
- Error evaluation for difference approximations to ordinary differential equations
M-FS-21610 B71-10423 09
- Algorithm for Liapunov stability analysis
ARC-10498 B72-10023 09
- Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
LANGLEY-11048 B72-10067 09
- Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04
- Evaluating foam heterogeneity
AEC-10046 B72-10365 04
- Analysis and computer programs to calculate acoustic wave properties of baffled chambers
LEWIS-11529 B72-10577 09
- Chemical kinetics computer program for static and flow reactions
LEWIS-11467 B72-10580 04
- Use of multivariable asymptotic expansions in a satellite theory
NPO-11750 B73-10303 09
- Marshall system for aerospace simulation (MARSYAS)
M-FS-22672 B73-10432 09
- Marshall vehicle-engineering simulation system (MARVES)
M-FS-21701 B75-10199 06
- A study of accuracy in selected numerical-analysis integration techniques
MSC-14802 B75-10273 09

DIFFERENTIAL PRESSURE

- Discharge coefficients for thick-plate orifices
LEWIS-11067 B70-10062 06
- Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 B70-10298 01
- Very low velocity flow sensor uses fluidic techniques
ERC-10404 B70-10461 03
- Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
- Bidirectional flow meter
M-FS-18737 B70-10589 07
- Chatter-free check valve - A concept
MSC-13262 B71-10067 07
- Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
- System accurately controls pressure in cryogenic tanks
LEWIS-11329 B71-10118 03
- Low cost, logarithmic mass flow computer
LEWIS-11001 B71-10407 06
- Multichamber controllable heat pipe
ARC-10199 B71-10526 03
- Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 B72-10154 03
- Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07
- Two-stage coaxial gas compressor
ARC-10426 B72-10210 06
- Miniature high pressure regulator
ARC-10428 B72-10211 07
- Self-aligning, low-pressure sealing poppet valve
MSC-17745 B72-10538 07
- Leak detector-measurer
M-FS-21761 B73-10203 07

DIFFERENTIAL THERMAL ANALYSIS

- Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09

DIFFERENTIATORS

- Artificial-feedback system
GSFC-10324 B70-10421 02
- High-accuracy detector for laser radar
MSC-13275 B70-10570 01
- Measurement of surface roughness slope
LEWIS-11080 B70-10722 01

DIFFRACTION

- Multipass holographic interferometer improves image resolution
HQ-10499 B70-10426 03
- Laser method for finding axis of rotation
ARC-10388 B70-10439 03
- Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 B71-10236 03
- Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
- Superconductor transition temperatures study
M-FS-21247 B71-10385 03

DIFFRACTION PATHS

- Holographic photography of high velocity particles
ERC-10318 B70-10371 03

DIFFRACTION PATTERNS

- Diffusion filter eliminates fringe effects of coherent laser light source
NPO-10417 B70-10226 03
- The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03
- Finite fringe hologram
HQ-10347 B70-10271 03
- Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
- Vibration detection using lasers
ARC-10389 B71-10145 03
- Radiation diffraction calculation program /DIFF2/
GSFC-11422 B71-10462 09
- Interferometric rotation sensor
ARC-10278 B72-10274 03
- Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03

DIFFUSE RADIATION

- Radiation view factor program
M-FS-21075 B71-10106 09
- Determination of radiation interchange factors
MSC-13475 B71-10295 09

DIFFUSERS

- Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03

DIFFUSION

- Improved silicon solar cells
LEWIS-10964 B70-10029 01
- Diffusion technique for lithium-doped silicon
GSFC-10827 B70-10148 01
- Determination of diffusion lengths in silicon by an X-ray method
LEWIS-10984 B70-10150 01
- Vapor feeding of liquid metal cathodes
HQ-10213 B70-10168 03
- Diffusion filter eliminates fringe effects of coherent laser light source
NPO-10417 B70-10226 03
- Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
- Growing single crystals in silica gel
ERC-10306 B70-10479 02
- Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
- Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
- Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08
- Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03
- Introduction of lithium into the front surface of solar cells
NPO-11404 B72-10086 02
- Hybrid holographic system
M-FS-20074 B72-10260 03
- New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
- A thermocouple thermode for small animals
ARC-10550 B72-10559 05

- Stable palladium alloys for diffusion of hydrogen
NPO-11747 B73-10024 04
- In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04
- DIFFUSION COEFFICIENT**
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04
- DIFFUSION ELECTRODES**
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
- DIFFUSION PUMPS**
Efficient baffle prevents oil backstreaming in diffusion pumps
LRL-10025 B72-10475 07
Improved method for reclaiming vacuum diffusion pump oil
LEWIS-11647 B72-10511 04
Diffusion pump modification promotes self-cleansing and high efficiency
LEWIS-12323 B75-10065 06
- DIFFUSION WELDING**
Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08
Metal-to-ceramic seals - A literature survey
NPO-11430 B71-10116 08
Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04
Improved diffusion welding and roll welding of titanium alloys
LEWIS-11852 B73-10005 08
Diffusion welding tool
LEWIS-11807 B73-10072 08
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
- DIFFUSIVITY**
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
Evaluating foam heterogeneity
AEC-10046 B72-10365 04
- DIFLUORIDES**
Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04
- DIGESTING**
Metabolic balance analysis program
M-FS-21237 B71-10384 09
- DIGESTIVE SYSTEM**
Sensor capsule for diagnosis of gastric disorders
HQ-10767 B72-10531 05
- DIGITAL COMMAND SYSTEMS**
A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09
- Digital servo controller behaves like synchro
KSC-10769 B73-10337 02
Single-channel digital command-detection system
NPO-11302 B73-10342 02
- DIGITAL COMPUTERS**
Device for printing alphanumeric listings and digital data plots
LEWIS-10954 B70-10002 02
High-resolution spectral analysis
NPO-10748 B70-10039 01
High speed television camera system processes photographic film data for digital computer analysis
NPO-10745 B70-10282 02
Design method for adsorption beds
HQ-10269 B70-10294 04
Visual device to assist computer program debugging
MSC-15833 B70-10308 09
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Artificial-feedback system
GSFC-10324 B70-10421 02
Elimination of redundancy in telemetered data
HQ-10585 B70-10431 06
Concept for a distributed processor computer
ERC-10271 B70-10481 02
Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09
A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Diagnostic capability added to digital events evaluator
KSC-10526 B71-10001 02
A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02
Computer-controlled mass spectrometer for on-line gas analysis
NPO-11427 B71-10191 03
Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09
Automatic transmission line monitor
KSC-10385 B71-10288 02
Determination of radiation interchange factors
MSC-13475 B71-10295 09
Novel shift register eliminates logic gates and power switching circuits
GSFC-10517 B71-10322 01
Solid-state data interpretation system - A concept
M-FS-20587 B71-10366 02
High efficiency telemetry method
NPO-10388 B71-10371 02
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
- A system for automatic analysis of blood pressure data for digital computer entry
LEWIS-11751 B72-10632 05
Computer-controlled vibration testing
NPO-11612 B73-10138 02
Stereoscopic computer graphics display system
M-FS-22322 B73-10526 09
Error-correcting codes for high-speed digital computers
M-FS-22887 B74-10147 02
Digital tape drive monitor
GSFC-11925 B75-10153 02
Improved general-purpose namelist processor
LANGLEY-11834 B75-10263 09
Generation of key in cryptographic system for secure communications
NPO-13451 B75-10278 09
- DIGITAL DATA**
Device for printing alphanumeric listings and digital data plots
LEWIS-10954 B70-10002 02
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01
Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 B70-10447 05
Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02
Biomedical recording system
MSC-13653 B70-10697 05
Improved convolutional coding
MSC-13625 B70-10698 09
Fast carry accumulator design
M-FS-20902 B71-10274 01
Automatic transmission line monitor
KSC-10385 B71-10288 02
Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
An improved data transfer and storage technique for hybrid computation
M-FS-22043 B72-10680 02
Digital data command bus
NPO-11637 B73-10035 01
Traveling digital counters for micrometers
LANGLEY-11258 B73-10042 06
A generalized approach to computer synthesis of digital holograms
M-FS-21973 B73-10101 09

- Digital video display system
NPO-11342 B73-10132 02
Digital TV image enhancement system
GSFC-11256 B73-10285 02
Flexible format, computer accessed
telemetry system
NPO-11358 B73-10290 02
RF to digital converter
JSC-14419 B73-10306 02
Processor for high-density digital
tape-recorded signals
NPO-11399 B73-10354 02
Digital slope-threshold data compressor
NPO-11630 B73-10355 02
Cardiotachometer displays heart rate on
a beat-to-beat basis
M-FS-20284 B73-10477 05
Subminiature micropower digital
recorder
ARC-10746 B73-10491 02
Data summary and computer program
for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
High-speed data word monitor
ARC-10899 B75-10129 02
Position sensing materials wound on a
reel
GSFC-11902 B75-10249 07
Simple temperature sensor with direct
readout
LANGLEY-11818 B75-10260 01
- DIGITAL FILTERS**
Digital data transition tracking loop
improves data reception
NPO-10844 B70-10009 02
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Error evaluation for difference
approximations to ordinary differential
equations
M-FS-21610 B71-10423 09
Selecting digital filters
M-FS-20933 B72-10156 01
Digital notch filter
KSC-10182 B73-10112 02
Low-distortion receiver for bilevel,
baseband PCM waveforms
MSC-14557 B74-10025 02
- DIGITAL INTEGRATORS**
Speed enhancement of complementary
MOS devices
ARC-10387 B72-10184 01
- DIGITAL SIMULATION**
Digital simulation program improved
M-FS-01504 B70-10705 09
Digital simulation error curves for a
spring-mass-damper system
M-FS-20770 B71-10003 09
Systems for dead-reckoning navigation
and for simulation of instrumental error -
Concepts
M-FS-20860 B71-10072 07
Spin vector control of a spinning space
station
M-FS-21333 B71-10296 09
Error evaluation for difference
approximations to ordinary differential
equations
M-FS-21610 B71-10423 09
Program for determination of radiation
interchange factors
MSC-17563 B72-10071 09
Computer modeling of arc drivers
ARC-10955 B75-10130 09
- Marshall vehicle-engineering simulation
system (MARVES)
M-FS-21701 B75-10199 06
- DIGITAL SPACECRAFT TELEVISION**
Slide checkout console
MSC-12318 B70-10290 02
- DIGITAL SYSTEMS**
Burst synchronization detection system
MSC-90317 B70-10159 02
Very high frequency digital rangine
system
MSC-15763 B70-10284 02
Electronically controlled motor drive
system has ultra-high reliability and long
lifetime
GSFC-10065 B70-10346 02
Digital phase-modulation/multiplex
system
NPO-11338 B70-10355 02
Concept for a distributed processor
computer
ERC-10271 B70-10481 02
Digital demodulation with data subcarrier
tracking
NPO-10858 B70-10518 02
Ground computer test trap
KSC-10574 B70-10561 09
Digital-voltage curve generator
NPO-11104 B70-10590 02
Post Flight Dynamic Analysis
Simulation
M-FS-15067 B70-10605 09
Biomedical recording system
MSC-13653 B70-10697 05
Improved convolutional coding
MSC-13625 B70-10698 09
Automatic reference level control for an
antenna pattern recording system
M-FS-20257 B71-10014 01
Digital telemetry system eliminates data
redundancy
MSC-12388 B71-10082 02
Digital-coded matrix system simplifies
design and construction of flow charts
MSC-13539 B71-10086 09
Digital decorrelator saves time and
expense in acoustic testing of structures
NPO-11542 B71-10157 03
Efficient digital comparison technique for
logic circuits
M-FS-21080 B71-10218 02
Precision calibration and reference
voltage source for data acquisition
systems
M-FS-20950 B71-10298 02
Digital aspect clock
ARC-10088 B71-10440 02
Design and evaluation of convectively
cooled nozzles
LEWIS-10894 B71-10508 09
Programmed multiplexing system
simultaneously monitors several voltages
MSC-17139 B71-10517 02
A remote test parameter profile display
LEWIS-11872 B73-10006 02
A closed, digital telephone system
JSC-13912 B73-10226 02
High speed direct-binary to
binary-coded-decimal converter and scaler
KSC-10326 B73-10281 02
Numerical interactive controller
NPO-11497 B73-10294 02
Digital servo control of random sound
fields
NPO-11623 B73-10297 02
- All-digital phase-lock loops for noise-free
signals
NPO-11914 B73-10350 01
Frequency control circuit for all-digital
phase-lock loops
NPO-11936 B73-10351 01
Digital transmitter for data bus
communications system
JSC-14558 B73-10511 02
Modular digital computer system
design
M-FS-22935 B74-10034 09
Dynamic polarization compensating
system for optical communications
receiver
GSFC-11782 B74-10182 03
Digital multichannel photometer
HQ-10791 B74-10200 03
Computerized logic design of digital
circuits
M-FS-22401 B74-10225 09
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
Page composer to translate binary
electrical data to optical form
M-FS-22589 B75-10161 02
- DIGITAL TECHNIQUES**
Array multiplier
ERC-90076 B70-10047 02
Rapid method for interconversion of
binary and decimal numbers
ARC-10159 B70-10496 09
New data acquisition system records
bearing measurements directly
LEWIS-10510 B70-10503 06
Inexpensive automatic ranging for digital
voltmeters and frequency counters
NUC-10240 B70-10530 01
High-speed digital plotter
ARG-90001 B71-10049 02
An improved telemetry system
ARC-10336 B71-10201 01
High efficiency telemetry method
NPO-10388 B71-10371 02
Principles of error detection and error
correction codes
NPO-11487 B71-10408 02
FORTRAN 4 digital program changer
MSC-17567 B71-10448 09
Theory and application of feedback shift
registers
NPO-11486 B71-10451 02
Ascent control analysis for S-II derivative
launch vehicles, digital computer program
M-FS-24324 B73-10120 09
Digital random-number generator
ARC-10096 B73-10266 09
Minimal hardware, binary sequence
pseudonoise generator and detector
NPO-11406 B73-10292 01
Low-cost coding techniques for digital
fault diagnosis
NPO-11701 B73-10344 09
Versatile, analog-to-digital,
power-regulator controller
NPO-13178 B73-10467 02
Micrometeoroid composition analyzer
GSFC-11892 B74-10287 01
Simple computer method provides
contours for radiological images
ARC-10940 B75-10146 09
Small interactive image processing
system (SMIPS)
GSFC-12079 B75-10295 09

DIGITAL TO ANALOG CONVERTERS

- Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
- Digital frequency discriminator
M-FS-14322 B70-10010 01
- Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01
- Two techniques for digital filter design
M-FS-20015 B70-10314 01
- Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
- Digital-voltage curve generator
NPO-11104 B70-10590 02
- A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
- Third order digital-to-analog converter
MSC-12458 B72-10030 02
- A range expanding signal conditioner
M-FS-21720 B72-10639 02
- Speech therapy and voice recognition instrument
HQ-10628 B72-10652 05
- An improved data transfer and storage technique for hybrid computation
M-FS-22043 B72-10680 02
- A remote test parameter profile display
LEWIS-11872 B73-10006 02
- Time-based priority selection for analog circuits
M-FS-24242 B73-10154 02
- A closed, digital telephone system
JSC-13912 B73-10226 02

DIISOCYANATES

- Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
- Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
- Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04

DILUTION

- Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05

DIMENSIONAL MEASUREMENT

- Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08
- Accurate thickness measurement of easily compressed materials
ARC-10551 B74-10111 04
- Nondestructive measurement of capillary tube internal diameter
LANGLEY-11647 B75-10156 02

DIMENSIONAL STABILITY

- Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
- A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04

DIMPLING

- Experimental study of surface cracks
MSC-14032 B72-10019 04

- Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 B72-10406 04
- DIODES**
- Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01
- Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01
- Ohmic diode
HQ-10534 B70-10200 01
- Low power NAND gate
M-FS-14487 B70-10203 01
- Electro-optical time marker for high-speed cameras
KSC-10294 B70-10229 01
- P-I-N diode switch
GSFC-10661 B70-10278 01
- Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
- Multiport semiconductor devices
ERC-10293 B70-10448 01
- Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03
- Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
- Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
- A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01
- P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
- Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
- Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 B70-10508 01
- Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
- Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01
- Digital-voltage curve generator
NPO-11104 B70-10590 02
- A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
- Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
- Constant current load matches impedances of electronic components
GSFC-10982 B70-10643 01
- Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
- Active parallel redundancy for electronic integrator-type control circuits
NUC-10231 B71-10040 01
- Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
- EKG isolator
M-FS-21236 B71-10124 05
- High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
- Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02

- Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
- A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
- Catheter transducer and circuit
ARC-10132 B71-10234 01
- Isoceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
- RF-controlled implantable solid state switch
ARC-10136 B71-10426 01
- Radiographic inspection specifications for electronic components
M-FS-20723 B71-10438 01
- Solar experiment alignment system
ARC-10471 B72-10020 03
- Circuit controls turn-on current
NPO-11339 B72-10079 01
- Control of acceleration in sine/random vibration tests
NPO-11482 B72-10091 02
- Gate protective device for insulated gate field-effect transistors
M-FS-21626 B72-10149 01
- Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01
- Simple dynamic electromagnetic radiation detector
LEWIS-11159 B72-10227 03
- Electronic switching circuit uses complementary non-linear components
AEC-10060 B72-10236 01
- Diode-quad bridge for reactive transducers and FM discriminators
ARC-10364 B72-10691 01
- Fail-safe bidirectional valve driver
NPO-11958 B73-10450 07
- High-power microstrip switch
NPO-11965 B73-10451 02
- Digital multichannel photometer
HQ-10791 B74-10200 03
- High-performance Schottky diodes endure high temperatures
M-FS-23184 B75-10101 01
- Microwave diode amplifiers with low intermodulation distortion
GSFC-11668 B75-10213 01
- Simple temperature sensor with direct readout
LANGLEY-11818 B75-10260 01
- Temperature-stable Gunn-diode oscillator
M-FS-23242 B75-10306 01

DIPLEXERS

- Dual-frequency feed-horn antenna
GSFC-10820 B71-10056 02
- Microwave dosimeter - A concept
HQ-10407 B71-10075 01
- Beam squint correction for a diplex, retrodirective phased array
GSFC-11023 B71-10444 02
- Combined diplexer and harmonic filter
LEWIS-12059 B73-10410 02

DIPOLE ANTENNAS

- Improved modified turnstile antenna
MSC-12209 B70-10482 01
- Microwave dosimeter - A concept
HQ-10407 B71-10075 01
- Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
- Improved circularly polarized antenna
ERC-10214 B74-10250 02

- Low-loss, circularly-polarized dichroic plate
NPO-13171 B74-10283 01
- DIPOLE MOMENTS**
Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04
- DIRECT CURRENT**
Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
Commutating brushes tested in dc motors in dry argon atmospheres
ARG-10243 B70-10045 01
High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01
Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01
Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
Hall effect encoding of brushless dc motors
GSFC-10789 B70-10188 01
Laser altimeter
M-FS-13691 B70-10196 02
Low power NAND gate
M-FS-14487 B70-10203 01
Two terminal current limiter
NPO-11350 B70-10232 01
Brushless direct-current motors
NPO-11351 B70-10234 02
Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01
A battery simulator
KSC-10172 B70-10340 01
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
Electronically controlled motor drive system has ultra-high reliability and long lifetime
GSFC-10065 B70-10346 02
A transformer of closely spaced pulsed waveforms
LEWIS-11045 B70-10351 01
Transistor current and voltage limiting switch
NPO-11166 B70-10414 01
Efficient/reliable dc-to-dc inverter circuit
XGS-06226 B70-10425 01
Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
Improved modified turnstile antenna
MSC-12209 B70-10482 01
Solid state variable time delay
ERC-10032 B70-10492 01
Metal detector system
ARC-10265 B70-10511 01
- Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 B70-10620 03
Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
Small, efficient power supply for xenon lamps
MSC-13637 B70-10684 01
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
Brushless direct-current motor with stationary armature and field
XGS-05290 B70-10691 02
Electronic strain-level counter
LANGLEY-10756 B70-10716 02
Microwave dosimeter - A concept
HQ-10407 B71-10075 01
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01
Electronic ripple indicator
KSC-10162 B71-10170 01
Pressure transducer with four-decade dynamic range
KSC-10384 B71-10323 01
Eye point-of-regard system
ARC-10360 B71-10476 05
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Pseudo-saturating power converter
NPO-11368 B72-10042 01
Electrical grounding bracket
ARC-10041 B72-10045 01
Improved device measures performance of batteries under load
ARC-10252 B72-10051 02
Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
Oxygen pressure control for electrolysis cells
ARC-10250 B72-10074 02
Circuit controls turn-on current
NPO-11339 B72-10079 01
Illumination control system
ARC-10527 B72-10167 02
Two-stage coaxial gas compressor
ARC-10426 B72-10210 06
A brushless dc spin motor for momentum exchange altitude control
M-FS-14952 B72-10448 02
Universal dc signal conditioner
MSC-17526 B72-10510 02
High-intensity source of extreme ultraviolet
HQ-10754 B72-10528 03
- DC motor proportional control system for orthotic devices
M-FS-21573 B72-10617 05
High-power ac/dc variable load simulator
MSC-14788 B75-10108 02
Solid state remote power controllers for 120 VDC power systems
LEWIS-12523 B75-10150 02
High-voltage stepping supply with fast settling time
GSFC-11844 B75-10191 02
Three-phase dc motor decoder
GSFC-11824 B75-10247 02
- DIRECT LIFT CONTROLS**
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
- DIRECTIONAL ANTENNAS**
Analysis and optimization of an omnidirectional direction-finding system
M-FS-14346 B70-10112 02
Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06
Circularly-polarized multiband telemetry tracking antenna
NPO-11264 B73-10288 02
Digital servo controller behaves like synchro
KSC-10769 B73-10337 02
Bidirectional zoom antenna
GSFC-11862 B74-10257 01
High-efficiency K-band tracking antenna feed
MSC-14717 B75-10107 02
Highly-efficient horn/reflector antenna
NPO-13568 B75-10330 01
- DIRECTIONAL CONTROL**
Vented vectoring-nozzle for STOL and V/STOL aircraft
ARC-10839 B74-10058 06
- DIRECTIVITY**
Nonequal iteration directional filters permit selective clearance of ripples in passband circuits
ERC-10313 B70-10385 01
- DISASTERS**
Medical vest broadens treatment capability
KSC-10577 B70-10529 05
- DISCHARGE COEFFICIENT**
Discharge coefficients for thick-plate orifices
LEWIS-11067 B70-10062 06
Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07
- DISCOLORATION**
Technique for in-place welding of aluminum backed up by a combustible material
LEWIS-11328 B71-10257 08
- DISCONNECT DEVICES**
Improved quick-disconnect electrical connector
M-FS-20610 B70-10109 01
Umbilical disconnect actuator
NPO-11202 B70-10170 07
Self-sealing, easily purged quick-disconnect hose coupling
MSC-17009 B70-10699 07
Squib-actuated disconnect device
NPO-11544 B72-10097 06
Fill and vent quick disconnect
M-FS-21822 B72-10645 07
Squib-operated disconnect
NPO-11330 B72-10713 06

Thermally responsive mechanical actuator
 GSFC-11697 B73-10208 04

DISCONTINUITY
 Acoustic vibration test detects intermittent electrical discontinuities
 MSC-15158 B70-10118 01
 Optimum Multi-Impulse Rendezvous Program
 MSC-13139 B70-10623 06
 Subroutines for evaluating single and multiple integrals using modified Romberg method
 NPO-11718 B71-10138 09
 Interpretation of aluminum-alloy weld radiography
 M-FS-20943 B71-10206 08
 Ultrasonic scanning system for in-place inspection of brazed-tube joints
 M-FS-21166 B71-10227 06
 Durability tester for FCC connectors
 M-FS-20128 B71-10418 08
 Method for calculating the stresses in pressure vessels
 MSC-13515 B71-10514 06
 Adhesion theory review
 AEC-10083 B72-10231 04

DISCRETE FUNCTIONS
 Chebyshev minimax control theory
 M-FS-20639 B70-10315 03

DISCRIMINATION
 Improved discrimination in photographic density contouring
 JSC-12588 B73-10441 03

DISCRIMINATORS
 Digital frequency discriminator
 M-FS-14322 B70-10010 01
 Wide-range pulse-height discriminator
 GSFC-10837 B70-10053 01
 Signal conditioner circuit for photomultiplier tube
 XLA-10773 B70-10096 01
 Reduction of background in an X-ray proportional counter
 HQ-10253 B70-10169 02
 Apparatus for simultaneous ion counting and current recording in mass spectrometry
 LEWIS-11103 B70-10471 03
 Portable low-frequency vibration measuring and recording system
 LANGLEY-10543 B71-10126 02
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03
 A reliable liquid helium detector
 LEWIS-11487 B72-10145 01
 Diode-quad bridge for reactive transducers and FM discriminators
 ARC-10364 B72-10691 01
 Peak-holding circuit for extremely narrow pulses
 JSC-14129 B73-10317 02
 Frequency discriminator/phase detector
 NPO-11515 B74-10098 02

DISEASES
 Polymers used to absorb fats and oils: A concept
 NPO-11609 B74-10210 05

DISKS
 Disc pack cleaning table saves computer time
 LANGLEY-10590 B70-10532 09

Fabrication of large ceramic electrolyte disks
 ARC-10320 B72-10202 03

DISKS (SHAPES)
 A concept for improving efficiency of multistage centrifugal pumps
 LEWIS-10966 B70-10287 07
 Improved burst disk/cutter assembly
 KSC-10516 B70-10583 07
 Peak wind speed anemometer /maxometer/
 M-FS-20916 B71-10023 07
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 Superconductor transition temperatures study
 M-FS-21247 B71-10385 03
 Optical bonding agents for severe environments
 ARC-10459 B72-10063 04
 An absorption spectrum amplifier for determining gas composition
 HQ-10752 B72-10524 03
 Full-flow fluid filter
 NPO-13118 B74-10277 02

DISPENSERS
 Iodine generator for disinfecting reclaimed water
 MSC-14632 B74-10153 05

DISPERSING
 Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03
 Improved photoionization mass spectrometer
 LANGLEY-10180 B70-10402 04
 Granular two-phase insulation systems
 NPO-12068 B71-10290 04
 Dispersion ring reduces injector orifice-to-orifice flow variation
 MSC-15953 B72-10117 07
 Procedure for dispersing fiber bundles
 LANGLEY-11224 B73-10438 08
 Miniature sonar fish tag
 LANGLEY-11814 B75-10092 02

DISPERSIONS
 Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 LEWIS-10515 B70-10185 04
 Hydraulic modeling of heat dispersion in large lakes
 AEC-10003 B72-10039 03
 Airfoil disperses smokestack effluents upward
 LANGLEY-11669 B75-10074 06

DISPLACEMENT
 Stability of structural rings under uniformly distributed radial loads
 NPO-11396 B70-10236 06
 Hall effect transducer gives electrical output proportional to meter shaft rotation
 LANGLEY-10620 B70-10298 01
 Efficient pressure-transformer for fluids
 M-FS-20830 B70-10595 07
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Inertia diaphragm pressure transducer
 XAC-2981 B71-10200 05
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09

Thermal heliotrope - A passive sun-tracker
 GSFC-10945 B71-10260 03
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06
 Anemometer calibrator
 M-FS-21424 B71-10519 03
 Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
 LEWIS-11636 B72-10070 09
 Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
 LEWIS-11097 B72-10111 09
 Bileaf mechanical strain gage
 ARC-10303 B72-10197 07
 Ferrofluidic solenoid with axial and radial displacement
 NPO-11738 B72-10241 06
 Adjustable locking device
 M-FS-21650 B72-10459 07
 Diode-quad bridge for reactive transducers and FM discriminators
 ARC-10364 B72-10691 01
 Accurate measurement of gas volumes by liquid displacement
 ARC-10723 B72-10699 03
 Volume measuring system
 MSC-13972 B74-10271 03

DISPLACEMENT MEASUREMENT
 Noncontacting-optical-strain device
 NPO-10778 B70-10292 03
 Experimental investigation and analysis of two sources of nozzle-thrust misalignment
 NPO-11355 B70-10406 06
 New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06

DISPLAY DEVICES
 Contourograph display system for monitoring electrocardiograms
 MSC-13407 B70-10030 05
 Improved antenna pattern recorder provides visual display of RF power
 M-FS-20447 B70-10230 09
 Automated validation of a computer operating system
 M-FS-14510 B70-10257 09
 Simple, accurate temperature-measuring instrument
 MSC-12327 B70-10303 01
 Visual device to assist computer program debugging
 MSC-15833 B70-10308 09
 Theory and application of Kalman filtering
 M-FS-20491 B70-10309 06
 Bimorph piezoelectric device functions as flapper valve
 ERC-10082 B70-10382 01
 Luminescent screen composition and apparatus
 ERC-10010 B70-10440 01
 Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 B70-10447 05
 Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01
 Ambient-light-absorbing screen for front projection
 ERC-90017 B70-10472 03

Visual display panel functions as computer input/output device
 ERC-10223 B70-10476 01
 Concept for high speed computer printer
 KSC-10373 B70-10484 09
 New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06
 Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
 KSC-10394 B70-10515 01
 Bistable fluidic valve is electrically switched
 NPO-10416 B70-10517 07
 Inexpensive automatic ranging for digital voltmeters and frequency counters
 NUC-10240 B70-10530 01
 Ground computer test trap
 KSC-10574 B70-10561 09
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 B70-10568 05
 Human performance measuring device
 LANGLEY-10679 B70-10619 05
 Automatic, computerized testing of bolts
 NPO-11090 B70-10657 06
 Man-machine interactive system simplifies computer-aided circuit design
 LANGLEY-10711 B70-10660 09
 Biomedical recording system
 MSC-13653 B70-10697 05
 Multimode ergometer system
 M-FS-21044 B71-10107 05
 Automatic cross-sectioning and monitoring system locates defects in electronic devices
 GSFC-11221 B71-10221 01
 Optical probing of supersonic flows with statistical correlation
 M-FS-20642 B71-10252 03
 Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 A real-time statistical time-series analyzer
 MSC-12428 B71-10276 02
 Automatic transmission line monitor
 KSC-10385 B71-10288 02
 Multispectral infrared imaging interferometer
 MSC-12404 B71-10325 02
 A system for the automatic measurement and digital display of systolic and diastolic blood pressures
 MSC-13227 B71-10329 05
 Pictorial display of materials and processes aids in fabricating complex assemblies
 M-FS-24006 B71-10341 01
 Laser net - A concept for monitoring wingtip vortices on runways
 M-FS-20857 B71-10360 02
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Television multiplexing system
 KSC-10654 B71-10391 02
 Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
 Programmed multiplexing system simultaneously monitors several voltages
 MSC-17139 B71-10517 02

Optical alignment of electrodes on electrical discharge machines
 XAC-09489 B72-10036 07
 Improved system for measuring speed of rotating machinery
 ARC-10413 B72-10179 07
 Video information system
 M-FS-21711 B72-10267 09
 Blood pressure measurement and display system
 MSC-13036 B72-10334 05
 A sonic transducer to detect fluid leaks
 KSC-10704 B72-10376 01
 Roll function in a flight simulator
 ARC-10557 B72-10417 02
 Airlock caution and warning system
 M-FS-21576 B72-10467 02
 Neutron radiographic viewing system
 M-FS-22024 B72-10468 02
 A compact battery powered digital thermometer
 MSC-14084 B72-10545 02
 An absentee monitoring device
 KSC-10668 B72-10578 01
 A system for automatic analysis of blood pressure data for digital computer entry
 LEWIS-11751 B72-10632 05
 A visual-display and storage device
 GSFC-10901 B72-10647 02
 Optimal read/write memory system components
 M-FS-22044 B72-10697 01
 A stable liquid crystal for electro-optical displays
 HQ-10714 B72-10746 04
 A remote test parameter profile display
 LEWIS-11872 B73-10006 02
 Video enhancement of X-ray and neutron radiographs
 LEWIS-11944 B73-10009 03
 Digital video display system
 NPO-11342 B73-10132 02
 Numerical interactive controller
 NPO-11497 B73-10294 02
 Alphanumeric character generator for oscilloscope
 GSFC-11582 B73-10370 02
 RF antenna-pattern visual aids for field use
 KSC-10821 B73-10426 02
 Cardiotachometer displays heart rate on a beat-to-beat basis
 M-FS-20284 B73-10477 05
 Stereoscopic computer graphics display system
 M-FS-22322 B73-10526 09
 Improved epitaxial process for fabricating silicon carbide semiconductor devices
 LEWIS-12094 B74-10017 04
 Graphics shadowing analysis
 M-FS-21406 B74-10040 09
 Recorder/processor apparatus
 GSFC-11553 B74-10042 03
 Marshall information retrieval and display system (MIRADS)
 M-FS-22536 B74-10043 09
 Generalized curve fit and plotting (GECAP) program
 M-FS-22728 B74-10044 09
 G-load indicator and warning device for aircraft
 ARC-10806 B74-10171 02
 Visualization of smoke stack plume
 LANGLEY-11675 B74-10208 04
 Ultrasonic scanner for footprint identification
 NPO-13055 B74-10212 03

High-speed data word monitor
 ARC-10899 B75-10129 02
 Real-time video correlator
 M-FS-23200 B75-10265 02
 Small interactive image processing system (SMIPS)
 GSFC-12079 B75-10295 09
DISPOSAL
 Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
 MSC-14247 B72-10616 08
DISSECTION
 Teardown analysis for detecting shelf-life degradation
 M-FS-24017 B71-10195 04
DISSIPATION
 Voltage regulator with multiple parallel power source sections
 GSFC-10891 B70-10195 02
 Ceramic wiring board increases packaging density of electronic modules
 MSC-13497 B71-10084 01
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 B71-10298 02
 Data sampling system for monitor and control station
 M-FS-20948 B71-10299 02
 Metal-shearing energy absorber
 HQ-10638 B71-10503 07
DISSOCIATION
 Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
 HQ-10389 B70-10108 03
 A program for computing shock-tube gas dynamic properties
 NPO-11068 B70-10133 09
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08
DISSOLVING
 Determination of nitrogen in titanium nitride
 LEWIS-11046 B70-10588 04
 Improved method for cladding the inside of metal tubes
 LEWIS-11174 B70-10723 08
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04
 Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
 M-FS-21113 B72-10321 04
DISTANCE
 A new method for measuring slipperiness of airport runways and other paved surfaces
 LANGLEY-10795 B70-10712 06
DISTANCE MEASURING EQUIPMENT
 Remote determination of sea conditions by electromagnetic backscatter measurement
 M-FS-13777 B71-10027 04
 Determining distance to lightning strokes from a single station
 KSC-10698 B73-10178 02
DISTILLATION
 Improved process for synthesizing anilinosilane compounds
 M-FS-14948 B70-10105 04
 Rapid analytical determination of glutaraldehyde concentrations
 ARG-10413 B71-10047 05
 Instrument detects bacterial life forms
 GSFC-10972 B71-10312 05

- Improved method for reclaiming vacuum diffusion pump oil
LEWIS-11647 B72-10511 04
- Chemical pretreatment for the distillation of urine
JSC-14225 B73-10224 04
- Design of a unit to produce hot distilled water for the same power consumption as a water heater
JSC-14224 B73-10402 04
- DISTILLATION EQUIPMENT**
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- Design of a unit to produce hot distilled water for the same power consumption as a water heater
JSC-14224 B73-10402 04
- DISTORTION**
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
- Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
- Analysis of thermal stress and metal movement during welding
M-FS-20984 B72-10333 04
- Dichromated-gelatin hologram process for improved optical quality
M-FS-23170 B75-10099 03
- DISTRIBUTION**
- Statistical analysis tables for truncated or censored samples
M-FS-21024 B71-10351 03
- DISTRIBUTION (PROPERTY)**
- The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03
- DISTRIBUTION FUNCTIONS**
- Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
- Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06
- Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03
- DISTRIBUTION MOMENTS**
- Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03
- DISTRIBUTORS**
- High-voltage distributors
GSFC-11849 B74-10242 01
- DISULFIDES**
- Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04
- DIVIDERS**
- An explosion-proof battery case
MSC-12335 B70-10304 01
- DIVING (UNDERWATER)**
- Analytic model for assessing thermal performance of SCUBA divers
ARC-10927 B75-10029 09
- DOCUMENT STORAGE**
- Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09
- Information retrieval system
HQ-10426 B70-10556 09
- Video information system
M-FS-21711 B72-10267 09
- Laser-actuated holographic storage device
M-FS-22768 B73-10423 03
- DOCUMENTATION**
- Wiring harnesses documented by punched-card technique
NPO-11249 B70-10091 09
- Thermal and structural modeling of superinsulation
M-FS-20324 B71-10019 02
- Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
- Information quality-control model
NPO-11431 B71-10281 06
- Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01
- Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
- FORTTRAN 4 digital program changer
MSC-17567 B71-10448 09
- Standard environmental testing practices
NPO-11567 B72-10101 02
- DOCUMENTS**
- Information retrieval system
HQ-10426 B70-10556 09
- Systems of coding and their implementation
NPO-11469 B71-10006 09
- Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07
- Theory and application of feedback shift registers
NPO-11486 B71-10451 02
- Guidelines for fabrication of hybrid microcircuits
M-FS-21964 B72-10393 01
- Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04
- DOMAINS**
- Automatic data generation scheme for finite-element method /FEDGE/
Computer program
NPO-11069 B70-10067 09
- DOORS**
- Easy manual operation of overhead garage doors - A concept
KSC-10555 B70-10543 07
- DOPES**
- Diffusion technique for lithium-doped silicon
GSFC-10827 B70-10148 01
- Dopant for sodium niobate capacitor dielectric
MSC-11773 B70-10190 01
- Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
- DOPPLER EFFECT**
- Telemetry receiver
NPO-10746 B70-10008 02
- A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
- Laser-Doppler gas velocimeter
M-FS-20583 B70-10143 02
- Data from various sources provide standard single-level resonance parameters for uranium 233
NUC-10229 B70-10357 03
- Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 B71-10120 03
- Laser vibration analyzer
XAC-01670 B71-10249 03
- Evaluation of jet engine noise
M-FS-21416 B72-10263 03
- Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03
- Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03
- Laser system detects air turbulence
M-FS-21244 B73-10210 03
- Laser velocimeter with transverse and on-axis sensitivity
ARC-10642 B73-10262 03
- Laser velocimeter for simultaneous two-dimensional velocity measurements
ARC-10637 B73-10267 02
- Three-dimensional gas turbulence measurement with a laser-Doppler velocimeter system
M-FS-22713 B73-10371 04
- Motion compensator for holographic motion picture camera
M-FS-22517 B73-10434 03
- Traffic control system and method
GSFC-10087 B74-10024 02
- Digital second-order phase-locked loop
NPO-11905 B74-10274 01
- DOPPLER RADAR**
- A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
- Economical phased-array antenna for environmental applications
HQ-10434 B71-10057 02
- New pulsing technique may improve radar ranging systems
ARC-10600 B72-10564 02
- True airspeed measured by airborne laser Doppler velocimeter
ARC-10763 B73-10506 02
- DOSAGE**
- Simple dynamic electromagnetic radiation detector
LEWIS-11159 B72-10227 03
- DOSIMETERS**
- Microwave dosimeter - A concept
HQ-10407 B71-10075 01
- Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03
- DRAFTING (DRAWING)**
- PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
- Three-dimensional models aid visualization of engineering drawings
NPO-13394 B75-10179 08
- DRAFTING MACHINES**
- Trimetric scale for drafting machines
MSC-15829 B75-10172 09
- DRAG**
- Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06
- Separation of two bodies in space
NPO-10663 B70-10625 09
- Lift distribution in a rectangular jet
ARC-10424 B71-10030 09

- Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
- Static aeroelastic program
LANGLEY-11602 B75-10298 06
- DRAG DEVICES**
Tandem wheel drop-legs for standard truck trailer
M-FS-13466 B70-10088 07
- Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07
- DRAG MEASUREMENT**
Water velocity meter
LANGLEY-10619 B70-10662 02
- Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09
- Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
- DRAG REDUCTION**
Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03
- DRAINAGE**
Preventing oil migration in vacuum systems
GSFC-11253 B72-10129 04
- DRAWINGS**
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
- Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
- DRIFT (INSTRUMENTATION)**
Automatic reference level control for an antenna pattern recording system
M-FS-20257 B71-10014 01
- High-speed digital plotter
ARG-90001 B71-10049 02
- Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
- High temperature gallium phosphide rectifiers
LEWIS-11804 B72-10673 01
- DRIFT RATE**
High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07
- Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
- Strain gage performance above 1033 K
M-FS-18831 B71-10225 04
- DRILL BITS**
Core drill's bit is replaceable without withdrawal of drill stem - A concept
M-FS-20819 B70-10391 07
- Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
- A lightweight, high output soil sampler
NPO-10797 B71-10159 07
- Hot tap thermowell installation
MSC-12427 B71-10302 07
- Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07
- Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
- Chuck for delicate drills
ARC-10660 B72-10414 07
- DRILLING**
Universal router concept
M-FS-20756 B70-10313 07
- Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
LEWIS-10856 B70-10468 07
- Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
- Remote coupling of air lines
NUC-10225 B71-10101 07
- Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
- Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
- Survey of information concerning large diameter deep hole drilling
AEC-10051 B72-10238 08
- Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07
- Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
- Chuck for delicate drills
ARC-10660 B72-10414 07
- Universal drill jig
M-FS-24464 B73-10324 07
- DRILLS**
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08
- Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08
- Hot tap thermowell installation
MSC-12427 B71-10302 07
- Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
- DROP SIZE**
Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
- Experimental verification of computer spray-combustion models
ARC-10689 B73-10031 03
- DROP TESTS**
Controlled release of free-falling test models
NPO-11314 B70-10077 07
- Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
- DROPOUTS**
Dropouts in magnetic tape recording and reproduction
NPO-11519 B71-10160 03
- Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02
- DROPS (LIQUIDS)**
Controlled droplet spray generator
LEWIS-11193 B70-10652 07
- Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
LANGLEY-10940 B72-10115 04
- Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
- Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
LEWIS-11270 B72-10546 06
- DROSOPHILA**
Acceleration of the aging process by oxygen
ARC-10928 B75-10030 05
- DRUGS**
Human performance measuring device
LANGLEY-10679 B70-10619 05
- Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- Automated method for study of drug metabolism
ARC-10469 B73-10030 04
- Automated drug identification system
NPO-13063 B74-10213 05
- Liquid sample processor
NPO-13136 B74-10278 05
- Improved extraction technique for biological fluids
NPO-13084 B75-10045 05
- DRUMS**
Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
- DRUMS (CONTAINERS)**
Remote coupling of air lines
NUC-10225 B71-10101 07
- Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
- Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
- Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
- DRY CELLS**
Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- Electrodes for sealed secondary batteries
ARC-10238 B72-10050 02
- DRY FRICTION**
Dry-frictional shock absorber
NPO-11212 B70-10040 07
- DRY HEAT**
Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
- DRYING**
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
- Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03
- DUCTED BODIES**
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09
- DUCTED FAN ENGINES**
Noise suppressor
LANGLEY-11141 B74-10261 03
- DUCTED FANS**
Prediction of ducted fan performance
ARC-10615 B72-10064 09
- Computer program for the attenuation of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09
- DUCTED FLOW**
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05

- Simplified computation of compressible fluid flow parameters
KSC-10400 870-10225 06
- Integrated turbine-compressor provides air flow for cooling
HQ-10442 870-10295 07
- Quick calculation method for fluid flow through duct systems
M-FS-15069 870-10487 02
- A theoretical study of aerodynamic noise generation
M-FS-24167 873-10209 03
- DUCTILITY**
- A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 870-10121 08
- The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 870-10146 04
- Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 870-10210 04
- Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
M-FS-18790 870-10213 04
- Biaxial prestressing of brittle materials
M-FS-20272 870-10316 04
- Effects of hydrogen on ELI titanium alloy Ti-5Al-2.5Sn
M-FS-18815 870-10366 04
- Improvement of adhesive-bonded structural joints
M-FS-20876 870-10663 08
- Method of joining metals of significantly different expansion rates
NPO-12076 871-10028 08
- Effect of size on cracking of materials
NPO-11602 871-10158 04
- Dispersion-strengthened chromium alloy
LEWIS-10982 872-10378 04
- Tungsten-reinforced tantalum
LEWIS-11750 872-10684 04
- DUCTS**
- Low-cost orbiting grinder for cutting ducts
M-FS-20684 870-10126 07
- Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 870-10166 06
- Quick calculation method for fluid flow through duct systems
M-FS-15069 870-10487 02
- Predicting vibrational failure of flexible ducting
M-FS-16750 871-10150 06
- Attitude controls for VTOL aircraft
XAC-8972 871-10202 05
- Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 871-10435 08
- Lightweight ducts fabricated from reinforced plastics and elastomers
MSC-19482 875-10173 06
- DUNITE**
- Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 870-10661 04
- DUPLEX OPERATION**
- Dual redundant core memory systems
MSC-13993 872-10261 09
- DURABILITY**
- Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 870-10569 01
- Welded polypropylene liners for large descaling tanks
M-FS-18711 871-10012 07
- Flat-conductor cable has rotary and linear flexibility
M-FS-21096 871-10242 01
- Durable cathodes for high-power inert-gas arcs
LEWIS-11162 871-10264 03
- Apparatus tests flexural durability of FCC
M-FS-20113 871-10458 08
- Water purification by reverse osmosis using heterocyclic polymer membranes
LANGLEY-10514 872-10230 04
- DUST**
- Disc pack cleaning table saves computer time
LANGLEY-10590 870-10532 09
- Sheet plastic filters for solar cells
NPO-11464 872-10090 04
- Container seal for dusty environment
LANGLEY-10962 873-10416 07
- DYE LASERS**
- A laser head for simultaneous optical pumping of several dye lasers
LANGLEY-11341 873-10336 03
- Dye laser remote sensing of marine plankton
LANGLEY-11382 873-10359 05
- Infrared tunable laser: A concept
ARC-10463 875-10081 03
- DYES**
- Thermal tuning of organic dye lasers
ERC-10187 870-10480 02
- Laser wavelength selector and output coupler
ERC-10248 870-10507 02
- Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 870-10600 04
- Dual-wavelength system monitors deposition of films - A concept
M-FS-20675 870-10658 03
- Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 871-10103 06
- Application of calibration masks to TV vidicon tube
KSC-10589 871-10404 02
- An absorption spectrum amplifier for determining gas composition
HQ-10752 872-10524 03
- Two new methods to increase the contrast of track-etch neutron radiographs
LEWIS-11893 873-10027 03
- DYNAMIC CHARACTERISTICS**
- New procedure for design of self-adaptive control systems
LANGLEY-10255 870-10115 02
- Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 870-10388 06
- Post Flight Dynamic Analysis Simulation
M-FS-15067 870-10605 09
- Long-life electromechanical sine-cosine generator
LANGLEY-10503 871-10029 01
- Rotordynamic response analysis program
HQ-10579 871-10211 09
- Pressure transducer with four-decade dynamic range
KSC-10384 871-10323 01
- Hermetically sealed motion transmitter
MSC-17348 871-10328 07
- Time-adjusted variable resistor
NPO-11306 872-10116 01
- Comparative performance of double-focus and quadrupole mass spectrometers
NPO-11689 872-10702 03
- Dynamic nonlinear analysis of shells of revolution (DYNASOR II)
JSC-14496 873-10443 09
- Computer program for flexible rotor dynamics analysis
LEWIS-12153 874-10084 09
- Separation dynamics of S-II derivative launch vehicle
M-FS-24325 874-10151 06
- Eigenfunction solution of damped structural systems: DAMP
NPO-13480 874-10169 09
- DYNAMIC CONTROL**
- Chebyshev minimax control theory
M-FS-20639 870-10315 03
- DYNAMIC LOADS**
- Accumulative weights program
M-FS-15066 871-10181 09
- High-power ac/dc variable load simulator
MSC-14788 875-10108 02
- DYNAMIC MODELS**
- Performance-limit criteria for the design of fast-response servo-actuation systems
LEWIS-11022 870-10152 02
- The use of the chatter mode in self-adaptive systems
HQ-10159 870-10274 06
- Frame modal analysis
MSC-17562 871-10414 09
- Vibrational transfer functions for base excited systems
M-FS-21432 871-10441 09
- DYNAMIC MODULUS OF ELASTICITY**
- Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 871-10297 04
- DYNAMIC PRESSURE**
- High amplitude sinusoidal pressure generator
LEWIS-11241 870-10635 07
- Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 870-10692 07
- Peak wind speed anemometer /maxometer/
M-FS-20916 871-10023 07
- DYNAMIC PROGRAMMING**
- A summary report on system effectiveness and optimization study
M-FS-22126 873-10104 09
- Marshall vehicle-engineering simulation system (MARVES)
M-FS-21701 875-10199 06
- DYNAMIC RESPONSE**
- Graphical method to predict the dynamic response of FM receivers
KSC-10111 870-10119 01
- Nonlinear damping in structures
M-FS-20701 870-10341 03
- Artificial-feedback system
GSFC-10324 870-10421 02
- Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 870-10508 01
- Technique for analyzing human respiratory process
MSC-13436 870-10528 05

Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03

Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03

NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09

Mathematical model for predicting human vertebral fracture
ARC-10691 B73-10033 05

Dynamic testing of complex structures
JSC-12569 B73-10057 06

Versatile electronic load
NPO-13202 B73-10458 03

Improved capacitance multiplier circuit
NPO-11948 B74-10162 02

DYNAMIC STABILITY

Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06

High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03

Performance evaluation system for inertial navigation equipment
MSC-13542 B71-10087 02

Computer method for identification of boiler transfer functions
LEWIS-11808 B72-10582 09

Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06

Two-directional active damper
LANGLEY-11815 B75-10259 06

Static aeroelastic program
LANGLEY-11602 B75-10298 06

DYNAMIC STRUCTURAL ANALYSIS

A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06

Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02

Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03

Synthesis of dynamic systems
M-FS-21490 B71-10491 09

Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09

Thermally stable structural framework
ARC-10612 B72-10252 08

Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06

Equations to assess the impact resistance of fiber composites
LEWIS-11486 B72-10503 04

Geometrically nonlinear static and dynamic analysis of arbitrarily loaded shells of revolution
LANGLEY-11109 B72-10504 09

Spectral analysis of multiple time series
M-FS-18859 B72-10614 09

Dynamic testing of complex structures
JSC-12569 B73-10057 06

Thermal-dynamic modeling study
LANGLEY-11309 B73-10076 06

Dynamic transformation method
M-FS-22848 B74-10076 06

Model optimization using statistical estimation
M-FS-22873 B74-10189 09

Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03

DYNAMIC TESTS

Safe suspension of specimens or clusters during dynamic testing - A concept
M-FS-15110 B70-10559 07

A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06

Improved elastomer for use with oxygen difluoride
ARC-10528 B72-10027 04

DYNAMOMETERS

High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01

Cine recording ophthalmoscope
ARC-10399 B72-10189 05

Accelerometer-controlled automatic braking system
LANGLEY-11383 B73-10419 06

Dynamometer for measuring machining forces in two perpendicular directions
M-FS-22899 B74-10148 07

DYNODES

Electron energy analyzer
HQ-10373 B70-10138 02

Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03

Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01

Scintillation detector for carbon-14
ARC-10378 B71-10144 03

Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01

E**EAR**

Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05

EARPHONES

Portable headset microphone checker
KSC-10699 B75-10254 02

EARTH ATMOSPHERE

Economical phased-array antenna for environmental applications
HQ-10434 B71-10057 02

Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02

Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09

EARTH ORBITS

Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03

EARTH RESOURCES

Slide checkout console
MSC-12318 B70-10290 02

Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02

Data processing large quantities of multispectral information
MSC-14472 B75-10080 03

EARTH SURFACE

Core drill's bit is replaceable without withdrawal of drill stem - A concept
M-FS-20819 B70-10391 07

Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02

A lightweight, high output soil sampler
NPO-10797 B71-10159 07

Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04

EARTH-MOON TRAJECTORIES

Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03

ECLIPTIC

Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09

ECOLOGY

A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05

Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04

Microflora in soils of desert regions
NPO-11215 B70-10253 05

Systems management techniques and problems
M-FS-21401 B71-10361 01

Hand-held photomicroscopy system
ARC-10468 B72-10190 03

Mercury in the environment
AEC-10048 B72-10233 05

ECONOMIC ANALYSIS

A method for economic evaluation of redundancy levels for aerospace systems
KSC-10754 B73-10067 09

ECONOMICS

Chebyshev minimax control theory
M-FS-20639 B70-10315 03

A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02

Computer program for discounted cash flow/rate of return evaluations
M-FS-19040 B71-10377 09

EDDY CURRENTS

Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05

Synthesis of diamonds
M-FS-20698 B70-10513 08

Electronic flaw simulator for eddy current probe calibration
NUC-10211 B70-10533 01

Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06

Qualifications and certification of nondestructive testing personnel
M-FS-20850 B71-10271 06

Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06

- Current switch has built-in time delay:
A concept
MSC-17324 B72-10453 01
In-service turbine wheel crack monitor
LEWIS-12422 B75-10012 02
Foam-machining tool with eddy-current transducer
M-FS-23298 B75-10309 08
- EDITING**
Information quality-control model
NPO-11431 B71-10281 06
- EDUCATION**
FORTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
Induction brazing manual
M-FS-14924 B71-10123 08
Systems management techniques and problems
M-FS-21401 B71-10361 01
Metabolic balance analysis program
M-FS-21237 B71-10384 09
Radiographic inspection specifications for electronic components
M-FS-20723 B71-10438 01
Theory and application of feedback shift registers
NPO-11486 B71-10451 02
Motivation techniques for supervision
JSC-19187 B73-10448 05
- EFFECTIVENESS**
New filter technique improves home television reception
MSC-13729 B71-10141 02
Generalized safety equation - A concept
M-FS-20522 B71-10183 06
Program audit, A management tool
KSC-10557 B71-10380 01
Turbulent mixing film cooling correlation
LEWIS-11417 B72-10326 07
- EFFERENT NERVOUS SYSTEMS**
Human performance measuring device
LANGLEY-10679 B70-10619 05
- EFFICIENCY**
Brushless direct-current motors
NPO-11351 B70-10234 02
Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 B70-10287 07
Radiant energy absorption enhancement in optical imaging systems
ARC-10194 B71-10112 03
An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07
Promising born/graphite/resin composites
M-FS-21126 B71-10217 04
High mobility work station restraint support
MSC-12419 B71-10301 07
Externally programmed variable timer
M-FS-20776 B71-10437 04
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
- EFFLUENTS**
Mass separator for low velocity ions
ARC-10375 B72-10123 03
Transonic divider for gas chromatograph effluents
NPO-11479 B72-10706 03
Visualization of smoke stack plume
LANGLEY-11675 B74-10208 04
Airfoil disperses smokestack effluents upward
LANGLEY-11669 B75-10074 06
Processing for obtaining good quality water from sewage
NPO-13224 B75-10113 04
- EGRESS**
Unified hatch system
MSC-15813 B71-10095 06
- EIGENVALUES**
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09
Error evaluation for difference approximations to ordinary differential equations
M-FS-21610 B71-10423 09
Synthesis of dynamic systems
M-FS-21490 B71-10491 09
Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09
Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06
Eigenvalue routine by Sturm sequence method
NPO-11805 B73-10114 09
Improved procedures for mass matrix-reductions in eigenvalue solutions
NPO-11619 B73-10384 09
Eigenvalue algorithm based on a combined sturm sequence and inverse iteration technique (EASI)
NPO-13368 B74-10215 09
- EIGENVECTORS**
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
Eigenfunction solution of damped structural systems: DAMP
NPO-13480 B74-10169 09
- EJECTION**
Jettisoning system for a parachute's canister
NPO-11236 B70-10398 06
Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02
- ELASTIC BENDING**
Miniature intermittent contact switch
ARC-10450 B72-10452 01
Suppression of bending motion in elastic bodies
XAC-05632 B74-10070 06
- ELASTIC BODIES**
Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 B70-10394 06
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05
- ELASTIC DAMPING**
Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 B71-10297 04
- Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07
- ELASTIC DEFORMATION**
Vibration damping of mechanical seals
M-FS-14160 B70-10068 07
Investigation of positive shaft seals
M-FS-18589 B70-10176 07
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
- ELASTIC PROPERTIES**
Unidirectional composite stiffening
HQ-10266 B70-10054 04
Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
Manually operated elastomer heat pump
NPO-10677 B70-10270 03
Method of joining metals of significantly different expansion rates
NPO-12076 B71-10028 08
A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04
Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
New understanding of fiber composite materials
NPO-11605 B71-10161 04
Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03
High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
Geometrically nonlinear static and dynamic analysis of arbitrarily loaded shells of revolution
LANGLEY-11109 B72-10504 09
Improved electrodes for skin contacts
M-FS-21926 B72-10698 05
- ELASTIC SCATTERING**
Elastic light-scattering modulator: A concept
M-FS-22724 B73-10422 03
- ELASTIC SHELLS**
Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06
Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09
- ELASTIC WAVES**
Acoustic emission used as weld quality monitor
AEC-10018 B72-10427 08
- ELASTOHYDRODYNAMICS**
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04

Lubricant selection for gear designers
LEWIS-11483 B72-10136 04

ELASTOMERS

Use of acrylic sheet molds for elastomeric products
MSC-15636 B70-10019 08

Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03

Polymerization of perfluorobutadiene
NPO-10863 B70-10131 04

Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04

Manually operated elastomer heat pump
NPO-10677 B70-10270 03

Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
MSC-13174 B70-10277 01

Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 B70-10334 04

Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04

Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05

Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 B70-10453 04

Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04

Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04

Conductive elastomeric extensometer
M-FS-21049 B71-10032 01

High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07

Improved thermal paint formulation
M-FS-14706 B71-10180 03

Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04

Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 B71-10291 04

Viscoelastic cushion for patient support
MSC-12447 B71-10316 05

Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04

Flame resistant elastic elastomeric fibers
MSC-13923-4 B72-10005 04

Zero-leakage valves
ARC-10506 B72-10024 06

Improved elastomer for use with oxygen difluoride
ARC-10528 B72-10027 04

Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 B72-10053 03

Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06

Pressure-probe assembly for wind tunnels
ARC-10569 B72-10248 03

Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04

Manufacture and quality control of interconnecting wire harnesses
M-FS-22511 B73-10211 01

Low-resistivity homogeneous elastomers
NPO-11881 B73-10349 04

Elastic light-scattering modulator: A concept
M-FS-22724 B73-10422 03

High-temperature gas/liquid stress relaxometers
NPO-13168 B73-10457 04

Apparatus for cutting elastomeric materials
NPO-13146 B73-10521 07

Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07

Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04

New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07

Lightweight ducts fabricated from reinforced plastics and elastomers
MSC-19482 B75-10173 06

Dip molding to form intricately-shaped medical elastomer devices
NPO-13535 B75-10238 08

ELASTOMETERS

Manually operated elastomer heat pump
NPO-10677 B70-10270 03

ELECTRIC ARCS

A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01

Low pressure arc electrode
ARC-10012 B70-10329 01

Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01

Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04

A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02

Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03

Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02

High voltage protection network
ARC-10197 B72-10119 02

Improved high-performance shock tube
NPO-11885 B72-10242 03

New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01

ELECTRIC BATTERIES

Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01

Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04

Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05

Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04

Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
MSC-13174 B70-10277 01

Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01

A battery simulator
KSC-10172 B70-10340 01

Microwave dosimeter - A concept
HQ-10407 B71-10075 01

Limited life item management
M-FS-24020 B71-10196 06

Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01

Battery simulation program
NPO-11580 B71-10250 09

Tone-activated, remote, alert communication system
NPO-11132 B71-10307 02

Communications system for zero-g simulation tests in water
M-FS-21357 B71-10344 02

Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06

Exothermic brazing units
M-FS-21435 B71-10467 08

Coaxial inverted geometry epitaxial transistor
ARC-10330 B72-10056 01

Hand-held photomicroscopy system
ARC-10468 B72-10190 03

An ingestible temperature-transmitter
ARC-10583 B72-10275 01

Method to determine vented electrochemical cell quality
GSFC-11216 B72-10396 04

Fabrication techniques for organic electrolyte battery
AEC-10019 B72-10428 08

Al/Cl₂ molten salt battery
HQ-10696 B72-10527 01

Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06

Battery cell thermal-conductive coating increases efficiency
LANGLEY-10963 B73-10237 01

Reliable low-cost battery voltage indicator for light aircraft and automobiles
LEWIS-12020 B73-10249 01

Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03

Battery activation system
ARC-10832 B74-10056 03

Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01

Facility for testing solar cells
NPO-11761 B74-10099 02

Lead-oxygen closed-loop battery system
M-FS-23059 B74-10267 06

Machine for fabrication of battery-electrode plaques
GSFC-12004 B75-10216 08

100-ampere-hour NiCd battery system
MSC-14774 B75-10233 01

Acid/alkali bromide secondary battery
NPO-13237 B75-10324 01

ELECTRIC BRIDGES

Simplified method for measuring the impedance of RF power sources - A concept
 NPO-10734 B70-10212 02
 Motor brush wear measured with strain gages
 GSFC-10886 B70-10266 01
 Electronic flaw simulator for eddy current probe calibration
 NUC-10211 B70-10533 01
 Conductive elastomeric extensometer
 M-FS-21049 B71-10032 01
 Dual-channel circuit conditions/amplifies transducers' inputs and outputs
 MSC-15712 B71-10069 01
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Pulse excitation of bolometer bridges
 ARC-10292 B72-10054 01
 Simple non-destructive tests for electroexplosive devices
 NPO-11563 B72-10315 01
 Diode-quad bridge for reactive transducers and FM discriminators
 ARC-10364 B72-10691 01
 Three-point bridge calibration with one resistor
 ARC-10762 B74-10047 01

ELECTRIC CELLS

A battery simulator
 KSC-10172 B70-10340 01

ELECTRIC CHARGE

Improved solid state electron-charge-storage device
 HQ-10152 B70-10074 01
 Nondissipative optimum charge regulator
 XGS-10439 B70-10186 01
 Remotely actuated release mechanism
 NPO-10698 B70-10286 01
 Coulometer battery state-of-charge indicator
 LEWIS-11083 B70-10323 01
 Development of a silver-zinc battery system
 NPO-11444 B70-10718 02
 A simple tachometer circuit
 ARC-10603 B72-10308 01
 Method to determine vented electrochemical cell quality
 GSFC-11216 B72-10396 04
 Micrometeoroid composition analyzer
 GSFC-11892 B74-10287 01

ELECTRIC CHOPPERS

Buck-boost dc voltage regulator
 GSFC-10735 B70-10005 01
 Solid-state ac-to-dc converter
 HQ-10545 B70-10147 02
 Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03
 Toroidal mirrors provide virtual walls for breaks in light pipes
 ARC-10031 B70-10632 03
 Differential input preamplifier
 ARC-10489 B72-10165 01
 Impulse commutating circuit with transformer to limit reapplied voltage
 LEWIS-11849 B73-10004 01

ELECTRIC COILS

Electrodynamical actuators for rocket engine valves
 ARC-10486 B72-10009 06
 Solenoid-operated swing-check valve
 XAC-10048 B72-10037 06
 Improved audio reproduction system
 ARC-10404 B72-10059 01

Ferrofluidic solenoid with axial and radial displacement
 NPO-11738 B72-10241 06

ELECTRIC CONDUCTORS

Fuse and switch functions combined within a single housing
 HQ-10497 B70-10003 01
 Stranded superconducting cable of improved design
 ARG-90108 B70-10070 01
 High-temperature electric stator
 LEWIS-10889 B70-10459 01
 Concept for a gas operated actuator
 NPO-11340 B70-10516 07
 Bistable fluidic valve is electrically switched
 NPO-10416 B70-10517 07
 High-temperature nickel-brazing alloy
 LEWIS-10928 B70-10537 08
 Flexible electrical conductors for high-temperature switchgear
 LEWIS-11109 B70-10569 01
 Hobel stripper for shielded and unshielded flat conductor cable
 M-FS-20120 B71-10060 08
 High voltage lightning grounding device
 LEWIS-11282 B71-10136 01
 Flat conductor cable handbook
 M-FS-21009 B71-10379 01
 Beryllium thin films for resistor applications
 ARC-10485 B72-10021 01
 A piezoelectrically actuated ball valve
 ARC-10338 B72-10204 06
 An electrohydrodynamic heat pipe
 ARC-10601 B72-10251 03
 Miniature intermittent contact switch
 ARC-10450 B72-10452 01

ELECTRIC CONNECTORS

Wiring harnesses documented by punched-card technique
 NPO-11249 B70-10091 09
 Improved quick-disconnect electrical connector
 M-FS-20610 B70-10109 01
 Acoustic vibration test detects intermittent electrical discontinuities
 MSC-15158 B70-10118 01
 An electrothermally actuated micro valve
 NPO-10730 B70-10171 07
 Improved shielding termination adapter for electrical cable connectors
 MSC-15565 B70-10217 01
 A miniature 1/4-inch diameter 24-pin plug and receptacle
 LANGLEY-10607 B70-10249 01
 An explosion-proof battery case
 MSC-12335 B70-10304 01
 Flat conductor cable connector with contact separation seal
 M-FS-20757 B70-10387 01
 Electrical test wire attachment device
 KSC-10562 B70-10488 01
 Connector locking device
 KSC-10537 B70-10553 01
 High-temperature rapid-response thermocouple for reducing atmospheres
 NUC-10530 B70-10564 03
 Flexible electrical conductors for high-temperature switchgear
 LEWIS-11109 B70-10569 01
 Filler-wire positioner for electron beam welding
 MSC-15637 B70-10604 08
 Compact electric heater
 LEWIS-11172 B70-10677 03

Fixture for plating stripped conductors of flat conductor cables /FCC/
 M-FS-20122 B70-10719 08
 Miniature multicontact connectors
 LANGLEY-10740 B70-10724 01
 Prevention of damage to delicate connectors during mounting of heavy engines for testing
 NUC-10322 B71-10044 06
 Program for improved electrical harness documentation and fabrication
 GSFC-10386 B71-10054 09
 Flat-conductor cable has rotary and linear flexibility
 M-FS-21096 B71-10242 01
 Low-temperature bonding of temperature-resistant electronic connections
 M-FS-20909 B71-10253 08
 Pressure transducer with four-decade dynamic range
 KSC-10384 B71-10323 01
 Improved smoke generator for low-speed wind tunnels
 LANGLEY-10885 B71-10337 06
 Seating tool for preparing molded-plug terminations on FCC
 M-FS-20123 B71-10417 08
 Durability tester for FCC connectors
 M-FS-20128 B71-10418 08
 Precision die-punch for trimming the conductors of flat conductor cable
 M-FS-20142 B71-10419 08
 Sprue cutoff tool for molded FCC plugs
 M-FS-20236 B71-10421 08
 Folding tool for preparing FCC molded-plug terminations
 M-FS-20116 B71-10422 08
 Multiedge slitter for FCC
 M-FS-20112 B71-10457 08
 Rotary stripper for shielded and unshielded FCC
 M-FS-20119 B71-10465 08
 Electrical grounding bracket
 ARC-10041 B72-10045 01
 Gate protective device for insulated gate field-effect transistors
 M-FS-21626 B72-10149 01
 Zipper-type electrical connectors
 NPO-11639 B72-10159 01
 Control of oscillations in a discharge circuit
 ARC-10556 B72-10304 01
 Improved universal electrical connector
 M-FS-14741 B72-10363 01
 Watertight low-cost electrical connector
 LEWIS-11552 B72-10506 01
 Universal dc signal conditioner
 MSC-17526 B72-10510 02
 Flat conductor cable survey
 M-FS-22493 B73-10055 01
 A proposed adjustable RF cable connector
 M-FS-24271 B73-10097 01
 Electromagnetic connector
 JSC-17420 B73-10125 07
 Flammability control for electrical cables and connectors
 M-FS-21584 B73-10235 02
 Safe electrical receptacle and modified plug
 KSC-10817 B73-10366 01
 Plug-in integrated/hybrid circuit
 M-FS-24470 B73-10476 01
 RF shielded connectors
 GSFC-11215 B73-10509 01

Improved circuit-board interconnectors
MSC-12661 B74-10239 01
Flammability study of materials in oxygen
environments
M-FS-23306 B75-10310 04

ELECTRIC CONTACTS

New transverse piezoresistance and
pinch effect electromechanical transducers
- A concept
ERC-10088 B70-10075 01
Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
Acoustic vibration test detects
intermittent electrical discontinuities
MSC-15158 B70-10118 01
Applications of gap welding
M-FS-20715 B70-10155 08
Technique for producing bipolar and MOS
field effect transistors on a single chip
MSC-13358 B70-10218 01
Bimorph piezoelectric device functions as
flapper valve
ERC-10082 B70-10382 01
Flat conductor cable connector with
contact separation seal
M-FS-20757 B70-10387 01
Copper-titanium eutectic alloy improves
electrical and mechanical contact to silicon
carbide
ERC-10256 B70-10444 04
Aluminum-silicon eutectic alloy improves
electrical and mechanical contact to silicon
carbide
ERC-10277 B70-10445 03
Flexible electrical conductors for
high-temperature switchgear
LEWIS-11109 B70-10569 01
Solid state remote circuit selector
switch
LEWIS-10387 B70-10579 01
Brushless direct-current motor with
stationary armature and field
XGS-05290 B70-10691 02
Fixture for plating stripped conductors
of flat conductor cables /FCC/
M-FS-20122 B70-10719 08
Miniature multicontact connectors
LANGLEY-10740 B70-10724 01
Universal interface enables one recorder
to serve numerous measuring instruments
M-FS-15134 B71-10011 01
Resistivity and Hall measurements of
thermoelectric materials
M-FS-20470 B71-10015 03
EKG isolator
M-FS-21236 B71-10124 05
Environmental effects on silicon solar
cells
NPO-11475 B71-10282 02
Improved relay chatter detector
NPO-10355 B71-10292 01
Silicon contact for area reduction of
integrated circuits
M-FS-20688 B71-10368 01
Fixture for multiple-FCC chemical
stripping and plating
M-FS-20237 B71-10420 08
Cable insulation cut-through tester
M-FS-20114 B71-10459 08
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
High intensity solar cell radiometer
LEWIS-11549 B72-10480 01
Humidity resistant solar cell contacts
HQ-10674 B72-10517 04

Liquid metal porous matrix sliding
electrical contact: A concept
LEWIS-11735 B73-10164 01
Improved photovoltaic devices, using
transparent contacts
LANGLEY-11761 B75-10220 01

ELECTRIC CONTROL

System accurately controls pressure in
cryogenic tanks
LEWIS-11329 B71-10118 03
Attitude controls for VTOL aircraft
XAC-8972 B71-10202 05
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
Vortex servovalve for fluidic or electrical
input
ARC-10155 B72-10173 07
Miniature intermittent contact switch
ARC-10450 B72-10452 01
Electrostatically controlled heat shutter
NPO-11942 B74-10161 03

ELECTRIC CORONA

Novel dielectric reduces corona
breakdown in ac capacitors
M-FS-21486 B72-10505 01
Dielectric films improve life of polymeric
insulators
ARC-10892 B75-10084 04

ELECTRIC CURRENT

Constant-voltage drive current-steering
switch
NPO-10743 B70-10046 01
Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
Solenoid valve performance
characteristics studied
M-FS-12458 B70-10066 07
Superconducting "transistor" acts as
high-speed switch
HQ-10547 B70-10082 01
Determination of diffusion lengths in
silicon by an X-ray method
LEWIS-10984 B70-10150 01
Constant current source for converting
absolute temperatures to analog voltages
NPO-10733 B70-10164 02
An electrothermally actuated micro
valve
NPO-10730 B70-10171 07
Low power NAND gate
M-FS-14487 B70-10203 01
Simple, accurate temperature-measuring
instrument
MSC-12327 B70-10303 01
Coulometer battery state-of-charge
indicator
LEWIS-11083 B70-10323 01
Dual current readout for precision
plating
MSC-15673 B70-10392 01
Kinetic inductance measured in a
superconducting wire
ERC-10305 B70-10491 03
Controlled current inductors
ERC-10139 B70-10494 01
Semiconductor cooling by thin-film
thermocouples
ERC-10149 B70-10495 01
Thermionic triode generates ac power
ERC-10284 B70-10499 01
Circuit minimizes current drain caused
by neon indicator lamps
NUC-10157 B70-10534 01
Lightweight S-band helix antenna
KSC-10392 B70-10538 02

Redundant electronic circuit provides
fail-safe control
NUC-10389 B70-10565 01
Solid state remote circuit selector
switch
LEWIS-10387 B70-10579 01
Compact electric heater
LEWIS-11172 B70-10677 03
Brushless direct-current motor with
stationary armature and field
XGS-05290 B70-10691 02
Advances in electrometer vacuum tube
design
GSFC-10729 B70-10696 01
Fixture for plating stripped conductors
of flat conductor cables /FCC/
M-FS-20122 B70-10719 08
Non-symmetrical two dimensional
scattering program
NPO-11576 B71-10007 09
Symmetrical two dimensional scattering
program
NPO-11578 B71-10008 09
Determination of nonlinear resistance
voltage-current relationships by measuring
harmonics
M-FS-20402 B71-10182 01
Small size transformer provides high
power regulation with low ripple and
maximum control
M-FS-16709 B71-10193 01
Portable circuit-interruption indicator
KSC-10546 B71-10246 02
Oscillating tank circuit eliminates ballast
resistor in lamp control circuit
M-FS-20891 B71-10275 01
Novel shift register eliminates logic gates
and power switching circuits
GSFC-10517 B71-10322 01
Voltage regulator dissipates minimal
power and functions as a voltage divider
B71-10367 01
Improved circuit avoids premature power
transistor failure
NPO-11365 B71-10370 02
RF-controlled implantable solid state
switch
ARC-10136 B71-10426 01
Wide-range logarithmic radiometer for
measuring high temperatures
ARC-10254 B71-10498 01
Programmed multiplexing system
simultaneously monitors several voltages
MSC-17139 B71-10517 02
Increasing the response of PIN
photodiodes to the ultraviolet
ARC-10274 B72-10053 03
Graph for locked rotor current
MSC-15703 B72-10075 06
Nematic liquid crystals for optical
shutters: A concept
NPO-11367 B72-10083 03
Vortex servovalve for fluidic or electrical
input
ARC-10155 B72-10173 07
Ferrofluidic solenoid with axial and radial
displacement
NPO-11738 B72-10241 06
Separation of gas mixtures by
centrifugation
ARC-10449 B72-10270 03
A brushless dc spin motor for momentum
exchange altitude control
M-FS-14952 B72-10448 02
Current switch has built-in time delay:
A concept
MSC-17324 B72-10453 01

- High-intensity source of extreme ultraviolet
HQ-10754 B72-10528 03
- Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
- Diode-quad bridge for reactive transducers and FM discriminators
ARC-10364 B72-10691 01
- Probes for measuring noise current in an electronic cable
NPO-13123 B73-10454 02
- Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01
- ELECTRIC DIPOLES**
- Optically activated magnetic recording tape
GSFC-10275 B70-10247 01
- Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
- Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
LANGLEY-10940 B72-10115 04
- ELECTRIC DISCHARGES**
- Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
HQ-10389 B70-10108 03
- Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
- Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01
- High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
- Improved plasma accelerator
ARC-10109 B71-10454 03
- Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 B72-10004 03
- Control of oscillations in a discharge circuit
ARC-10556 B72-10304 01
- A simple tachometer circuit
ARC-10603 B72-10308 01
- Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01
- Gate protective device for SOS array
HQ-10745 B72-10755 01
- Computer modeling of arc drivers
ARC-10955 B75-10130 09
- ELECTRIC ENERGY STORAGE**
- Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
- Aluminum nitride insulating films for MOSFET devices
NPO-11859 B72-10425 04
- Improved operation of rechargeable oxygen electrodes
LEWIS-11619 B72-10479 01
- Wind energy utilization: A bibliography
LEWIS-12518 B75-10136 02
- An experimental 100 kilowatt wind turbine generator
LEWIS-12509 B75-10147 03
- ELECTRIC EQUIPMENT**
- Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
- A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06
- Control of oscillations in a discharge circuit
ARC-10556 B72-10304 01
- A simple tachometer circuit
ARC-10603 B72-10308 01
- Survey of aircraft electrical power systems
LEWIS-11678 B72-10383 02
- Aluminum nitride insulating films for MOSFET devices
NPO-11859 B72-10425 04
- Cathode for use with low density gases
HQ-10687 B72-10530 01
- Advanced high-temperature electromagnetic pump
LEWIS-11283 B72-10537 07
- DC motor proportional control system for orthotic devices
M-FS-21573 B72-10617 05
- A simple, efficient resistance soldering apparatus
GSFC-10913 B72-10649 08
- An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06
- Automatic method of measuring silicon-controlled-rectifier holding current
LEWIS-11898 B72-10752 02
- Electroshock protection circuit
JSC-14222 B73-10261 02
- ELECTRIC EQUIPMENT TESTS**
- Measuring the conductor spacing in flat conductor cables
M-FS-20560 B70-10015 08
- High temperature circuit breaker
LEWIS-90265 B70-10721 01
- Miniature multicontact connectors
LANGLEY-10740 B70-10724 01
- Portable circuit-interruption indicator
KSC-10546 B71-10246 02
- A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
LEWIS-12109 B75-10068 02
- ELECTRIC FIELD STRENGTH**
- Pseudo-saturating power converter
NPO-11368 B72-10042 01
- Monitor for checking electric-field meters
KSC-10851 B75-10296 02
- ELECTRIC FIELDS**
- Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
- Electron energy analyzer
HQ-10373 B70-10138 02
- Null type instrument for simplifying two dimensional field plotting
XLA-08493 B70-10192 01
- Optically activated magnetic recording tape
GSFC-10275 B70-10247 01
- Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
- Multipoint semiconductor devices
ERC-10293 B70-10448 01
- Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
- Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 B70-10620 03
- Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
- Dual-frequency feed-horn antenna
GSFC-10820 B71-10056 02
- Improved charged-particle analyzer - A concept
XAC-05506 B71-10283 03
- Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
- Introduction of lithium into the front surface of solar cells
NPO-11404 B72-10086 02
- Device for measuring electric fields
ARC-10164 B72-10148 03
- Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01
- Aluminum nitride insulating films for MOSFET devices
NPO-11859 B72-10425 04
- Suspension of objects in magnetic and electric fields
JSC-14170 B73-10058 03
- Measuring the electric field of a cloud
KSC-10731 B73-10074 02
- Rocket borne instrument to measure electric fields inside electrified clouds
KSC-10730 B73-10176 03
- Determining distance to lightning strokes from a single station
KSC-10698 B73-10178 02
- Ion masking improves resolution in quadrupole mass spectrometers
GSFC-11406 B73-10181 03
- Elastic light-scattering modulator: A concept
M-FS-22724 B73-10422 03
- ELECTRIC FILTERS**
- Active resistance capacitance filter design
ARC-10020 B70-10034 01
- Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
- Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
- Design procedure for improved active filters
M-FS-20445 B70-10238 02
- Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
- Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
- Technique for refocusing, decompressing, and conditioning spent electron beams
LEWIS-11617 B72-10727 03
- Carrier extraction circuit
JSC-14262 B73-10094 02
- Electronic high pass filter
LEWIS-11600 B74-10083 02
- ELECTRIC FUSES**
- Fuse and switch functions combined within a single housing
HQ-10497 B70-10003 01
- Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01
- Solid state bistable power switch
ERC-10290 B70-10383 01
- High voltage protection network
ARC-10197 B72-10119 02
- ELECTRIC GENERATORS**
- Critical speed analysis of rotors
LEWIS-11061 B70-10288 06

- Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Induction generator produces constant-frequency voltage from variable-speed drive
 ERC-10065 B70-10478 02
 Saturable-reactor motor starter reduces line voltage fluctuations
 M-FS-18921 B71-10013 01
 Survey of heat transfer to near critical fluids
 LEWIS-11289 B71-10262 03
 Improved circuit avoids premature power transistor failure
 NPO-11365 B71-10370 02
 Effect of thermal discharges on the mass energy balance of Lake Michigan
 AEC-10013 B72-10004 03
 Pseudo-saturating power converter
 NPO-11368 B72-10042 01
 Survey of aircraft electrical power systems
 LEWIS-11678 B72-10383 02
 Radioisotope thermal generator (RTG) power conditioner
 LANGLEY-11313 B74-10022 03
 Magnetic bearings with combined radial and axial control
 GSFC-11551 B74-10131 06
 Large-scale solar thermal collector concepts
 M-FS-23167 B75-10098 03
 Heat-operated cryogenic electrical generator
 NPO-13303 B75-10116 03
 Zener-regulated solar array/battery power system
 M-FS-23195 B75-10162 02
 Solar power roof shingle
 LEWIS-12587 B75-10289 01
 Low-Cost thin-layer silicon solar cells
 GSFC-12023 B75-10293 04
 Using permeable membranes to produce hydrogen and oxygen from water
 MSC-12600 B75-10314 04
- ELECTRIC MOTORS**
 Commutating brushes tested in dc motors in dry argon atmospheres
 ARG-10243 B70-10045 01
 Hall effect encoding of brushless dc motors
 GSFC-10789 B70-10188 01
 Two-speed wheel-drive system without lubrication
 M-FS-20645 B70-10193 07
 Brushless direct-current motors
 NPO-11351 B70-10234 02
 Motor brush wear measured with strain gages
 GSFC-10886 B70-10266 01
 Universal router concept
 M-FS-20756 B70-10313 07
 Safe/armed explosive squib
 XLA-10372 B70-10328 01
 High-temperature electric stator
 LEWIS-10889 B70-10459 01
 Induction generator produces constant-frequency voltage from variable-speed drive
 ERC-10065 B70-10478 02
 Brushless direct-current motor with stationary armature and field
 XGS-05290 B70-10691 02
- Saturable-reactor motor starter reduces line voltage fluctuations
 M-FS-18921 B71-10013 01
 Miniature grinder for solid specimens
 M-FS-20005 B71-10059 05
 Durability tester for FCC connectors
 M-FS-20128 B71-10418 08
 Brushless DC motor with dual windings
 M-FS-21290 B71-10530 02
 Position indicating, rotating boom
 LANGLEY-11202 B72-10066 07
 Compensating subreflector for two-reflector antennas: A concept
 NPO-11503 B72-10093 06
 Piezoelectric actuator uses sequentially-excited multiple elements: A concept
 NPO-11527 B72-10096 01
 Noncontact torque measurement using stroboscopic techniques
 MSC-12282 B72-10332 07
 A brushless dc spin motor for momentum exchange altitude control
 M-FS-14952 B72-10448 02
 DC motor proportional control system for orthotic devices
 M-FS-21573 B72-10617 05
 Waveguide switch protector
 NPO-11592 B72-10705 01
 An electric motor with magnetic bearings: A concept
 XGS-07805 B73-10304 01
 An electrochemical engine
 M-FS-22542 B73-10473 07
 Magnetic bearings with combined radial and axial control
 GSFC-11551 B74-10131 06
 Improved magnetic suspension technique
 GSFC-11079 B74-10254 03
 Motor-driven rack-positioning device
 ARC-10864 B75-10058 06
 Three-phase dc motor decoder
 GSFC-11824 B75-10247 02
 Solid-state motor control and monitor system
 MSC-12721 B75-10316 02
- ELECTRIC NETWORKS**
 A real-time statistical time-series analyzer
 MSC-12428 B71-10276 02
 Topological solution of bilateral switching networks
 ARC-10294 B72-10055 01
 A linear circuit analysis program with stiff systems capability
 LANGLEY-11184 B73-10091 09
- ELECTRIC OUTLETS**
 A conceptual current surge protector for incandescent lamps
 M-FS-16658 B70-10483 01
 Hot tap thermowell installation
 MSC-12427 B71-10302 07
 Contact-resistance test probes: A concept
 M-FS-16891 B71-10471 01
 Safe electrical receptacle and modified plug
 KSC-10817 B73-10366 01
- ELECTRIC POTENTIAL**
 Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 B70-10021 01
 Electrodynamical induction flowmeter
 HQ-10230 B70-10024 01
 Improved silicon solar cells
 LEWIS-10964 B70-10029 01
- Solenoid valve performance characteristics studied
 M-FS-12458 B70-10066 07
 Superconducting "transistor" acts as high-speed switch
 HQ-10547 B70-10082 01
 Antenna-array, phase quadrature tracking system
 MSC-12205 B70-10095 02
 High energy density electrochemical cell
 LEWIS-10969 B70-10151 01
 Precision full-wave rectifier
 ARC-10101 B70-10161 02
 Constant current source for converting absolute temperatures to analog voltages
 NPO-10733 B70-10164 02
 Transistor bonding pad configuration for uniform injection and low inductance
 GSFC-10790 B70-10181 01
 Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Null type instrument for simplifying two dimensional field plotting
 XLA-08493 B70-10192 01
 Low power NAND gate
 M-FS-14487 B70-10203 01
 Hall effect transducer gives electrical output proportional to meter shaft rotation
 LANGLEY-10620 B70-10298 01
 Optimal electric-drive system for vehicles
 NPO-11210 B70-10435 02
 Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 B70-10447 05
 Multipoint semiconductor devices
 ERC-10293 B70-10448 01
 Wide-range tracking oscillator generates phase and frequency coherent output
 M-FS-14518 B70-10451 02
 Induction generator produces constant-frequency voltage from variable-speed drive
 ERC-10065 B70-10478 02
 A power semiconductor test circuit with reduced power requirements
 LEWIS-11175 B70-10498 01
 Metal detector system
 ARC-10265 B70-10511 01
 Circuit minimizes current drain caused by neon indicator lamps
 NUC-10157 B70-10534 01
 Digital input is buffered to real-time analog display
 KSC-10397 B70-10562 01
 Redundant electronic circuit provides fail-safe control
 NUC-10389 B70-10565 01
 Solid state remote circuit selector switch
 LEWIS-10387 B70-10579 01
 Digital-voltage curve generator
 NPO-11104 B70-10590 02
 Computerized toroidal transformer design
 NPO-11115 B70-10606 09
 System automatically tunes hydrogen masers
 HQ-10502 B70-10616 02
 Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03

A new solid-state logarithmic radiometer
 ARC-10287 870-10633 02
 Intruder detection system
 ARC-10097 870-10638 02
 Integrator for on-line measurement of buffet signals
 LANGLEY-10627 870-10639 02
 Small, efficient power supply for xenon lamps
 MSC-13637 870-10684 01
 Composite metal-oxide device has voltage sensitive capacitance
 HQ-10594 870-10687 01
 Universal interface enables one recorder to serve numerous measuring instruments
 M-FS-15134 871-10011 01
 High current compensation network for dc logarithmic amplifiers
 NUC-10148 871-10128 01
 Isolated-line commutator-amplifier
 M-FS-20734 871-10148 02
 Design of hysteresis circuits using differential amplifiers
 ARC-10070 871-10162 01
 A topological approach to computer-aided sensitivity analysis
 ARC-10214 871-10164 02
 Triangular-wave generator with controlled sweep polarity
 ARC-10332 871-10166 03
 Voltage-controlled oscillator
 ARC-10078 871-10171 01
 A 20 kHz power oscillator
 LEWIS-11319 871-10174 01
 Determination of nonlinear resistance voltage-current relationships by measuring harmonics
 M-FS-20402 871-10182 01
 Small size transformer provides high power regulation with low ripple and maximum control
 M-FS-16709 871-10193 01
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 871-10199 08
 Coarse roll-rate gain-control circuit
 ARC-10064 871-10204 01
 Constant-amplitude, frequency-independent phase shifter
 ARC-10269 871-10230 02
 Oscillating tank circuit eliminates ballast resistor in lamp control circuit
 M-FS-20891 871-10275 01
 Improved charged-particle analyzer - A concept
 XAC-05506 871-10283 03
 Improved relay chatter detector
 NPO-10355 871-10292 01
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 871-10298 02
 Accelerated battery-life testing - A concept
 GSFC-11085 871-10348 06
 A study of nitride devices for computer memory applications
 M-FS-20971 871-10350 03
 Voltage regulator dissipates minimal power and functions as a voltage divider
 871-10367 01
 RF-controlled implantable solid state switch
 ARC-10136 871-10426 01
 Pulse width-pulse rate modulator
 ARC-10025 871-10497 01

Wide-range logarithmic radiometer for measuring high temperatures
 ARC-10254 871-10498 01
 Programmed multiplexing system simultaneously monitors several voltages
 MSC-17139 871-10517 02
 Brushless DC motor with dual windings
 M-FS-21290 871-10530 02
 High noise immunity one shot
 ARC-10137 872-10047 01
 Graph for locked rotor current
 MSC-15703 872-10075 06
 Precision voltage regulator
 NPO-11502 872-10092 01
 Piezoelectric actuator uses sequentially-excited multiple elements: A concept
 NPO-11527 872-10096 01
 Stable photosensor amplifiers
 NPO-11561 872-10100 01
 Hexapole magnet field analysis
 GSFC-10995 872-10113 03
 Compensation of voltage drops in solid-state switches used with thermoelectric generators
 NPO-11388 872-10138 01
 Temperature compensation of light-emitting diodes
 ARC-10467 872-10218 01
 A continuous physiological data collector
 M-FS-20835 872-10402 05
 A brushless dc spin motor for momentum exchange altitude control
 M-FS-14952 872-10448 02
 Novel dielectric reduces corona breakdown in ac capacitors
 M-FS-21486 872-10505 01
 Universal dc signal conditioner
 MSC-17526 872-10510 02
 A voltage-tunable three-terminal Gunn device
 HQ-10783 872-10518 01
 High-intensity source of extreme ultraviolet
 HQ-10754 872-10528 03
 Electronic integrator for gyro rate output voltages
 NPO-11499 872-10555 01
 Oscillating hot-wire anemometer
 NPO-11634 872-10609 02
 Fast response densitometer for measuring liquid density
 M-FS-14478 872-10664 02
 Irradiation of MOS-FET devices to provide desired logic functions
 GSFC-11061 872-10719 01

ELECTRIC POWER

High-frequency wattage-to-voltage converter
 LEWIS-10822 870-10049 01
 Thermally cascaded thermoelectric generator
 NPO-10753 870-10280 03
 A hybrid electromechanical solid state switch for ac power control
 MSC-14005 872-10018 02
 Radioisotope thermionic power supply for spacecraft
 ARC-10438 872-10212 03
 Computer program analyzes and monitors electrical power systems (POSIMO)
 GSFC-11505 872-10610 09
 Proposed electromagnetic wave energy converter
 GSFC-11394 873-10185 01

An electrochemical engine
 M-FS-22542 873-10473 07
 Solar-energy conversion system provides electrical power and thermal control for life-support systems
 M-FS-21628 873-10524 06

ELECTRIC POWER PLANTS

Automatic lightning location system
 AEC-10077 872-10372 02

ELECTRIC POWER SUPPLIES

Improved operation of rechargeable oxygen electrodes
 LEWIS-11619 872-10479 01
 Computer program analyzes and monitors electrical power systems (POSIMO)
 GSFC-11505 872-10610 09
 Peak-power-point monitor for solar panel
 NPO-11708 872-10694 02
 Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
 MSC-17930 872-10722 06

ELECTRIC POWER TRANSMISSION

Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 870-10346 02
 Kinetic inductance measured in a superconducting wire
 ERC-10305 870-10491 03
 Dual-frequency feed-horn antenna
 GSFC-10820 871-10056 02
 Portable circuit-interruption indicator
 KSC-10546 871-10246 02
 Computer program analyzes and monitors electrical power systems (POSIMO)
 GSFC-11505 872-10610 09
 Dynamic power load simulator
 JSC-14285 873-10305 02
 Laser energy converted into electric power
 NPO-13308 873-10353 02
 Probes for measuring noise current in an electronic cable
 NPO-13123 873-10454 02
 High-voltage distributors
 GSFC-11849 874-10242 01
 High-power ac/dc variable load simulator
 MSC-14788 875-10108 02
 Laser-to-electricity energy converter for short wavelengths
 NPO-13390 875-10119 03
 Solid state remote power controllers for 120 VDC power systems
 LEWIS-12523 875-10150 02
 Voltage monitoring system
 KSC-10736 875-10154 02
 High-voltage stepping supply with fast settling time
 GSFC-11844 875-10191 02
 Trigger circuit forces immediate synchronization of free-running oscillator
 NPO-13646 875-10337 01

ELECTRIC PROPULSION

Theoretical study of a plasma accelerator
 NPO-11480 870-10683 03
 Radioisotope thermionic power supply for spacecraft
 ARC-10438 872-10212 03
 Optimization technique for problems with an inequality constraint
 ARC-10522 872-10222 09

Rapid analysis of electric propulsion missions
 ARC-10430 B72-10299 09
 An electrochemical engine
 M-FS-22542 B73-10473 07

ELECTRIC PULSES

Electro-optical time marker for high-speed cameras
 KSC-10294 B70-10229 01
 Intruder detection system
 ARC-10097 B70-10638 02
 Miniature implantable instrument measures and transmits heart function data
 ARC-10201 B71-10163 05
 Nonvolatile read/write memory element - A concept
 GSFC-10993 B71-10346 01
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 Digital aspect clock
 ARC-10088 B71-10440 02
 Inertial reference unit
 NPO-11518 B72-10094 02
 Optical shutter for use in shock tubes
 ARC-10516 B72-10128 03
 Lightning flash detection system
 ARC-10562 B72-10272 02

ELECTRIC REACTORS

Improved circuit avoids premature power transistor failure
 NPO-11365 B71-10370 02

ELECTRIC RELAYS

The use of the chatter mode in self-adaptive systems
 HQ-10159 B70-10274 06
 Safe/armed explosive squib
 XLA-10372 B70-10328 01
 Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
 KSC-10394 B70-10515 01
 Latching overcurrent circuit breaker
 NPO-11131 B70-10524 01
 Universal interface enables one recorder to serve numerous measuring instruments
 M-FS-15134 B71-10011 01
 Multiple shutters for a stereoscopic camera
 MSC-13507 B71-10065 03
 Improved relay chatter detector
 NPO-10355 B71-10292 01
 Tone-activated, remote, alert communication system
 NPO-11132 B71-10307 02
 Radiographic inspection specifications for electronic components
 M-FS-20723 B71-10438 01
 Current switch has built-in time delay: A concept
 MSC-17324 B72-10453 01
 Sprag solenoid brake
 M-FS-21846 B72-10669 06
 Waveguide switch protector
 NPO-11592 B72-10705 01
 Self-healing fuse
 LEWIS-11964 B74-10004 02
 High voltage solid-state relay
 LEWIS-12096 B74-10006 01
 Very high voltage latching relay
 LEWIS-12265 B74-10079 01
 Piezoelectric relay
 GSFC-11627 B74-10089 01
 Solid-state motor control and monitor system
 MSC-12721 B75-10316 02

ELECTRIC SPARKS

An explosion-proof battery case
 MSC-12335 B70-10304 01
 Optical alignment of electrodes on electrical discharge machines
 XAC-09489 B72-10036 07
 Spark ultrasonic transducer
 M-FS-21233 B72-10594 04

ELECTRIC SWITCHES

Remotely actuated release mechanism
 NPO-10698 B70-10286 01
 Miniature implantable instrument measures and transmits heart function data
 ARC-10201 B71-10163 05
 Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07
 Soldering iron temperature indicator
 NPO-11545 B72-10098 02
 Time-adjusted variable resistor
 NPO-11306 B72-10116 01
 Compensation of voltage drops in solid-state switches used with thermoelectric generators
 NPO-11388 B72-10138 01
 Miniature intermittent contact switch
 ARC-10450 B72-10452 01
 Indexing film with a fluidic sensor
 MSC-14117 B72-10501 02
 Waveguide switch protector
 NPO-11592 B72-10705 01
 Synchro phase selector aid
 LANGLEY-11282 B73-10160 01
 Logic controlled solid state switchgear
 LEWIS-12044 B73-10408 02
 Self-healing fuse
 LEWIS-11964 B74-10004 02
 Self-protecting solid state isolated switch
 LEWIS-12268 B74-10069 01
 Very high voltage latching relay
 LEWIS-12265 B74-10079 01
 Radio-controlled, sound-operated switch
 LANGLEY-11641 B74-10143 03

ELECTRIC TERMINALS

Improved low cost ac-to-dc converter
 NPO-11055 B70-10076 01
 Superconducting "transistor" acts as high-speed switch
 HQ-10547 B70-10082 01
 Transistor bonding pad configuration for uniform injection and low inductance
 GSFC-10790 B70-10181 01
 Improved shielding termination adapter for electrical cable connectors
 MSC-15565 B70-10217 01
 Two terminal current limiter
 NPO-11350 B70-10232 01
 Multiport semiconductor devices
 ERC-10293 B70-10448 01
 Electrical test wire attachment device
 KSC-10562 B70-10488 01
 Digital input is buffered to real-time analog display
 KSC-10397 B70-10562 01
 High voltage lightning grounding device
 LEWIS-11282 B71-10136 01
 Coarse roll-rate gain-control circuit
 ARC-10064 B71-10204 01
 Constant-amplitude, frequency-independent phase shifter
 ARC-10269 B71-10230 02
 Circuit controls turn-on current
 NPO-11339 B72-10079 01
 Driver circuit for inductive loads
 ARC-10073 B72-10268 01

Magnet-wire wrapping tool for integrated circuits

NPO-11815 B72-10426 07
 Improved electrical spot terminals
 NPO-10034 B72-10492 01
 Flat conductor cable survey
 M-FS-22493 B73-10055 01
 Increasing terminal strip efficiency at cryogenic temperatures
 M-FS-23234 B75-10266 03

ELECTRIC WELDING

Resistance spot welding of dispersion-strengthened nickel alloys
 LEWIS-12075 B73-10315 04

ELECTRIC WIRE

Superconducting "transistor" acts as high-speed switch
 HQ-10547 B70-10082 01
 Integrated circuit flat-pack lead bender
 MSC-13489 B70-10117 01
 A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01
 Color identification testing device
 KSC-10278 B70-10264 01
 Program for improved electrical harness documentation and fabrication
 GSFC-10386 B71-10054 09
 Hobel stripper for shielded and unshielded flat conductor cable
 M-FS-20120 B71-10060 08
 Flat conductor cable handbook
 M-FS-21009 B71-10379 01
 Electrical grounding bracket
 ARC-10041 B72-10045 01
 Improved universal electrical connector
 M-FS-14741 B72-10363 01
 Improved electrical spot terminals
 NPO-10034 B72-10492 01
 A simple, efficient resistance soldering apparatus
 GSFC-10913 B72-10649 08
 Flammability control for electrical cables and connectors
 M-FS-21584 B73-10235 02
 Multilayer flat electrical cable
 ARC-10734 B73-10264 01
 Fluorescent color coding of power receptacles
 MSC-19504 B75-10109 01

ELECTRICAL CONDUCTIVITY METERS

Electrodynamical induction flowmeter
 HQ-10230 B70-10024 01

ELECTRICAL ENGINEERING

Zipper-type electrical connectors
 NPO-11639 B72-10159 01

ELECTRICAL FAULTS

Power semiconductor device with negative thermal feedback
 HQ-10577 B70-10262 01
 Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
 KSC-10394 B70-10515 01
 High-temperature rapid-response thermocouple for reducing atmospheres
 NUC-10530 B70-10564 03
 Study of second breakdown in power transistors using infrared techniques
 M-FS-20748 B71-10021 01
 Driver circuit for inductive loads
 ARC-10073 B72-10268 01
 High intensity solar cell radiometer
 LEWIS-11549 B72-10480 01
 Novel dielectric reduces corona breakdown in ac capacitors
 M-FS-21486 B72-10505 01

SUBJECT INDEX

High temperature gallium phosphide rectifiers
LEWIS-11804 872-10673 01
Gate protective device for SOS array
HQ-10745 872-10755 01
Nomograph for prediction of RF-breakdown voltages
NPO-11819 873-10386 01
Design method for minimizing RF voltage breakdown
NPO-13408 873-10520 01
Self-protected electrodes limit field-emission current
ERC-10015 874-10253 01

ELECTRICAL GROUNDING

Improved shielding termination adapter for electrical cable connectors
MSC-15565 870-10217 01
High voltage lightning grounding device
LEWIS-11282 871-10136 01
Rotary stripper for shielded and unshielded FCC
M-FS-20119 871-10465 08
Electrical grounding bracket
ARC-10041 872-10045 01
Bio-isolated DC operational amplifier
ARC-10596 874-10112 01

ELECTRICAL IMPEDANCE

Integrated circuit random-access memory decoder
ERC-10211 870-10372 01
Semiconductor cooling by thin-film thermocouples
ERC-10149 870-10495 01
Plasma conductivity gage
ARC-10147 870-10510 03
Electronic flow simulator for eddy current probe calibration
NUC-10211 870-10533 01
Technique for lowering the noise figure in RF amplifiers
HQ-10435 870-10650 01
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 870-10651 01
Wein bridge oscillator circuit
MSC-13686 871-10089 01
Polarographic carbon dioxide transducer amplifier
MSC-13728 871-10090 02
Electrical instrument measures position and velocity of shock waves
ARC-10356 871-10143 03
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 872-10057 01
Driver circuit for inductive loads
ARC-10073 872-10268 01
Generalized current distribution rule
LANGLEY-11565 874-10093 02

ELECTRICAL INSULATION

Improved low cost ac-to-dc converter
NPO-11055 870-10076 01
Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept
NPO-10755 870-10090 07
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 870-10330 04
High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 870-10429 08
Sorption vacuum trap
ERC-90051 870-10449 06

Electrical test wire attachment device
KSC-10562 870-10488 01
Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 870-10632 03
Miniature multicontact connectors
LANGLEY-10740 870-10724 01
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 871-10046 03
Improved high-temperature metal-sheathed cables
NUC-10413 871-10102 01
Inertia diaphragm pressure transducer
XAC-2981 871-10200 05
Water electrolysis module
ARC-10246 871-10203 03
Flat-conductor cable has rotary and linear flexibility
M-FS-21096 871-10242 01
Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 871-10337 06
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 871-10417 08
Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 871-10419 08
Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 871-10420 08
Improved plasma accelerator
ARC-10109 871-10454 03
Cable insulation cut-through tester
M-FS-20114 871-10459 08
Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 871-10460 08
Hot-blade stripper for polyester insulation on FCC
M-FS-20117 871-10461 08
Handling fixture for soldering round wires to FCC
M-FS-20118 871-10464 08
Rotary stripper for shielded and unshielded FCC
M-FS-20119 871-10465 08
Zipper-type electrical connectors
NPO-11639 872-10159 01
High voltage electrical insulation coating for refractory materials
LEWIS-11479 872-10290 04
Protective encapsulation of implantable biotelemetry units
ARC-10514 872-10301 05
Aluminum nitride insulating films for MOSFET devices
NPO-11859 872-10425 04
Insulated-gate field-effect transistor strain sensor
LANGLEY-11012 872-10731 01
Multilayer flat electrical cable
ARC-10734 873-10264 01
Increasing terminal strip efficiency at cryogenic temperatures
M-FS-23234 875-10266 03

ELECTRICAL MEASUREMENT

A battery simulator
KSC-10172 870-10340 01
Quasi-optical equivalent of waveguide slide screw tuner
ERC-10312 870-10384 01
Plasma conductivity gage
ARC-10147 870-10510 03
Electronic ripple indicator
KSC-10162 871-10170 01

ELECTRICAL PROPERTIES

Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 871-10517 02
Peak-power-point monitor for solar panel
NPO-11708 872-10694 02
Apparatus for measuring electrical properties of materials
NPO-11749 873-10025 03
Measuring the electric field of a cloud
KSC-10731 873-10074 02
Rocket borne instrument to measure electric fields inside electrified clouds
KSC-10730 873-10176 03
Electrometer system measures nanoamps at high voltage
LEWIS-12267 874-10064 01
DC-to-AC inverter ratio failure detector
NPO-13160 874-10282 01
Microelectronic fabrication of superconducting devices and circuits
NPO-13419 875-10120 01
Nondestructive measurement of capillary tube internal diameter
LANGLEY-11647 875-10156 02

ELECTRICAL PROPERTIES

High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 870-10429 08
High-temperature electric stator
LEWIS-10889 870-10459 01
Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 870-10612 04
Development of a silver-zinc battery system
NPO-11444 870-10718 02
Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 871-10022 03
Environmental effects on silicon solar cells
NPO-11475 871-10282 02
Improved device measures performance of batteries under load
ARC-10252 872-10051 02
Selecting digital filters
M-FS-20933 872-10156 01
Improved feedback shift register
NPO-10351 872-10226 01
Control of oscillations in a discharge circuit
ARC-10556 872-10304 01
A simple tachometer circuit
ARC-10603 872-10308 01
Packaging concept for LSI beam lead integrated circuits
M-FS-21374 872-10329 07
Overlap diffusion for increasing phototransistor dynamic range
M-FS-20407 872-10347 01
Improved universal electrical connector
M-FS-14741 872-10363 01
Aluminum nitride insulating films for MOSFET devices
NPO-11859 872-10425 04
Fabrication techniques for organic electrolyte battery
AEC-10019 872-10428 08
Miniature intermittent contact switch
ARC-10450 872-10452 01
Improved operation of rechargeable oxygen electrodes
LEWIS-11619 872-10479 01
Cathode for use with low density gases
HQ-10687 872-10530 01

- Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04
- An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06
- Analysis of circuits including magnetic cores (MTRAC)
NPO-11494 B72-10724 02
- Automatic method of measuring silicon-controlled-rectifier holding current
LEWIS-11898 B72-10752 02
- Gate protective device for SOS array
HQ-10745 B72-10755 01
- Apparatus for measuring electrical properties of materials
NPO-11749 B73-10025 03
- Silicon on sapphire for ion implantation studies
LANGLEY-11415 B73-10522 04
- ELECTRICAL RESISTANCE**
- Electrodynamic induction flowmeter
HQ-10230 B70-10024 01
- Active resistance capacitance filter design
ARC-10020 B70-10034 01
- Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
- Simplified method for measuring the impedance of RF power sources - A concept
NPO-10734 B70-10212 02
- Design procedure for improved active filters
M-FS-20445 B70-10238 02
- Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
- Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
- High-temperature electric stator
LEWIS-10889 B70-10459 01
- RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
- Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01
- High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
- Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
- Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 B71-10212 08
- Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03
- A simple, efficient resistance soldering apparatus
GSFC-10913 B72-10649 08
- Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01
- ELECTRICAL RESISTIVITY**
- High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
- A transformer of closely spaced pulsed waveforms
LEWIS-11045 B70-10351 01
- A conceptual current surge protector for incandescent lamps
M-FS-16658 B70-10483 01
- High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08
- Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 B70-10569 01
- Resistivity and Hall measurements of thermoelectric materials
M-FS-20470 B71-10015 03
- Producing graphite with desired properties
NUC-11001 B71-10042 04
- Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
- Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
- Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08
- Superconductor transition temperatures study
M-FS-21247 B71-10385 03
- Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
- Time-adjusted variable resistor
NPO-11306 B72-10116 01
- Apparatus for measuring electrical properties of materials
NPO-11749 B73-10025 03
- Low-resistivity homogeneous elastomers
NPO-11881 B73-10349 04
- ELECTRIFICATION**
- An unconfined, large-volume hydrogen/air explosion
NUC-11000 B71-10041 03
- High voltage lightning grounding device
LEWIS-11282 B71-10136 01
- ELECTRO-OPTICAL PHOTOGRAPHY**
- Electro-optical time marker for high-speed cameras
KSC-10294 B70-10229 01
- Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03
- Multiple shutters for a stereoscopic camera
MSC-13507 B71-10065 03
- Vibration detection using lasers
ARC-10389 B71-10145 03
- ELECTRO-OPTICS**
- A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02
- Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
- Directional coupler for optical waveguides
ERC-10094 B70-10381 03
- Multipass holographic interferometer improves image resolution
HQ-10499 B70-10426 03
- Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
- Luminescent screen composition and apparatus
ERC-10010 B70-10440 01
- Optical probing of supersonic aerodynamic turbulence
M-FS-20686 B70-10665 03
- Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03
- Kaleidoscopic light feedback for television systems
MSC-12386 B71-10068 03
- Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
- Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
- Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03
- A stable liquid crystal for electro-optical displays
HQ-10714 B72-10746 04
- Design and fabrication of an experimental image forming light modulator
M-FS-22547 B73-10182 03
- Electro-optical device for monitoring wire size
LANGLEY-11358 B73-10321 02
- System for measuring transients in fluid flow
ARC-10852 B74-10217 03
- Wide-field birefringent elements
MSC-12677 B75-10105 03
- Optical feedback technique extends frequency response of photoconductors
LANGLEY-11768 B75-10223 03
- Electro-optical detector to improve sensitivity of a focal-plane mass spectrometer
NPO-13524 B75-10328 03
- Automated mass spectrometer/analysis system: A concept
NPO-13572 B75-10331 05
- ELECTROACOUSTIC TRANSDUCERS**
- Fabrication of electroacoustic RF amplifiers
ERC-10266 B70-10460 01
- ELECTROCARDIOGRAPHY**
- Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
- Control system for an artificial heart
LEWIS-11057 B70-10469 05
- Biomedical recording system
MSC-13653 B70-10697 05
- Multimode ergometer system
M-FS-21044 B71-10107 05
- EKG isolator
M-FS-21236 B71-10124 05
- A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
- Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05
- A differential ECG amplifier with single-ended output
ARC-10411 B72-10061 05
- Narrowband, crystal-controlled biomedical telemetry system
ARC-10708 B72-10255 01
- Compression and R-wave detection of ECG/VCG data
MSC-14126 B72-10391 05
- Improved biomedical electrode
MSC-13648 B72-10642 05

- A new dry biomedical electrode
JSC-14321 B73-10146 02
- Insulated ECG electrodes
JSC-14339 B73-10220 05
- Microminiaturized, biopotential conditioning system (MBCS)
JSC-14180 B73-10236 02
- Vectorcardiogram
JSC-14427 B73-10401 02
- Heart-rate pulse-shift detector
ARC-10729 B74-10196 01
- Computer program for analysis of vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
- Electrocardiogram signal analyzer
MSC-12710 B75-10269 05
- ELECTROCATALYSTS**
- Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
- Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
HQ-10565 B70-10035 01
- Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
- ELECTROCHEMICAL CELLS**
- Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
- High energy density electrochemical cell
LEWIS-10969 B70-10151 01
- Improved alkaline electrochemical cell
GSFC-10792 B70-10153 01
- Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
- Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06
- Improved device measures performance of batteries under load
ARC-10252 B72-10051 02
- Carbon dioxide concentrator
ARC-10245 B72-10194 05
- Method to determine vented electrochemical cell quality
GSFC-11216 B72-10396 04
- Rapid detection of bacteria in foods and biological fluids
GSFC-11738 B73-10045 05
- Battery cell thermal-conductive coating increases efficiency
LANGLEY-10963 B73-10237 01
- Corrugated battery electrode
GSFC-11368 B73-10515 01
- Detecting and measuring metabolic byproducts by electrochemical sensing
LANGLEY-11525 B73-10523 05
- Carbon monoxide detector
M-FS-23090 B74-10268 04
- ELECTROCHEMICAL MACHINING**
- Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
- Electro-chemical grinding
LANGLEY-10801 B72-10744 08
- ELECTROCHEMISTRY**
- Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01
- Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02
- Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02
- Fabrication techniques for organic electrolyte battery
AEC-10019 B72-10428 08
- Metered oxygen supply aids treatment of domestic sewage
ARC-10024 B72-10557 05
- An electrochemical engine
M-FS-22542 B73-10473 07
- Detecting and measuring metabolic byproducts by electrochemical sensing
LANGLEY-11525 B73-10523 05
- Acid/alkali bromide secondary battery
NPO-13237 B75-10324 01
- ELECTRODE FILM BARRIERS**
- Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
- ELECTRODEPOSITION**
- Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02
- Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
- Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
- Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04
- Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
- Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
- High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
- ELECTRODES**
- Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
- Electrodynamical induction flowmeter
HQ-10230 B70-10024 01
- Thermoelectric radiometer
ARC-10138 B70-10056 02
- Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
- A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01
- Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
- Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08
- Piezoelectric transducer
HQ-10548 B70-10157 01
- Low pressure arc electrode
ARC-10012 B70-10329 01
- High temperature ion source
ERC-10197 B70-10379 03
- Solid state bistable power switch
ERC-10290 B70-10383 01
- Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05
- Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02
- Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01
- Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
- Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04
- Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
- Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
- Accurate pointing of tungsten welding electrodes
ARG-10449 B71-10048 08
- Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
- EKG isolator
M-FS-21236 B71-10124 05
- Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03
- Improved reversible coulometer cell
SAN-10051 B71-10176 02
- Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01
- Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
- High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
- Superconductor transition temperatures study
M-FS-21247 B71-10385 03
- Screening method improves performance of nickel-cadmium batteries
GSFC-11260 B71-10411 04
- Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01
- Optical alignment of electrodes on electrical discharge machines
XAC-09489 B72-10036 07
- Electrodes for sealed secondary batteries
ARC-10238 B72-10050 02
- Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02
- High-temperature, long-life thyatron
LEWIS-11327 B72-10134 01
- Gate protective device for insulated gate field-effect transistors
M-FS-21626 B72-10149 01
- Aircrew oxygen system
ARC-10247 B72-10195 05
- An electrohydrodynamic heat pipe
ARC-10601 B72-10251 03
- High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
- A sensitive image intensifier which uses inert gas
LRL-10024 B72-10312 03
- Fabrication techniques for organic electrolyte battery
AEC-10019 B72-10428 08
- Improved operation of rechargeable oxygen electrodes
LEWIS-11619 B72-10479 01

- Al/C12 molten salt battery
 HQ-10696 872-10527 01
 Sensor capsule for diagnosis of gastric disorders
 HQ-10767 872-10531 05
 Metered oxygen supply aids treatment of domestic sewage
 ARC-10024 872-10557 05
 Spark ultrasonic transducer
 M-FS-21233 872-10594 04
 Improved biomedical electrode
 MSC-13648 872-10642 05
 Improved electrodes for skin contacts
 M-FS-21926 872-10698 05
 Thin-film ultraviolet detector and spectrometer
 NPO-11432 872-10701 03
 Improved photoetching fabrication method
 LEWIS-11268 872-10745 08
 A new dry biomedical electrode
 JSC-14321 873-10146 02
 Insulated ECG electrodes
 JSC-14339 873-10220 05
 Corrugated battery electrode
 GSFC-11368 873-10515 01
 Honeycomb battery plaque
 GSFC-11367 873-10519 01
 Finger recording electrode system for electrical impedance plethysmograph
 ARC-10816 874-10172 05
 Trielectrode capacitive pressure transducer
 ARC-10711 875-10025 01
 Machine for fabrication of battery-electrode plaques
 GSFC-12004 875-10216 08
- ELECTRODYNAMICS**
 Electrodynamical induction flowmeter
 HQ-10230 870-10024 01
 Electrodynamical actuators for rocket engine valves
 ARC-10486 872-10009 06
- ELECTROENCEPHALOGRAPHY**
 Electronic sleep analyzer
 MSC-13282 870-10110 02
 Post-operative cranial pressure monitoring system
 ERC-10336 870-10436 05
 Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 870-10447 05
 Log amplifier instrument measures physiological biopotentials over wide dynamic range
 ARC-10032 870-10508 01
 Biomedical recording system
 MSC-13653 870-10697 05
 Narrowband, crystal-controlled biomedical telemetry system
 ARC-10708 872-10255 01
 Improved biomedical electrode
 MSC-13648 872-10642 05
 Flexible electroencephalogram (EEG) headband
 LANGLEY-10927 873-10048 05
 Eight-channel telephone telemetry system
 JSC-14452 873-10320 05
- ELECTROFORMING**
 Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 870-10018 01
 Cast segment evaluation
 M-FS-21354 871-10363 08
- Joining porous components to solid metal structures
 LEWIS-11259 872-10754 08
 High strength, wire-reinforced electroformed structures
 LEWIS-12087 874-10018 08
- ELECTROHYDRODYNAMICS**
 An electrohydrodynamic heat pipe
 ARC-10601 872-10251 03
- ELECTROLUMINESCENCE**
 Electro-optical time marker for high-speed cameras
 KSC-10294 870-10229 01
 Growth of single-crystal gallium nitride
 ERC-10301 870-10473 03
 Visible light electroluminescent diodes of indium-gallium phosphide
 ERC-10303 870-10474 01
- ELECTROLYSIS**
 Water electrolysis module
 ARC-10246 871-10203 03
 Electrolysis cell functions as water vapor dehumidifier and oxygen generator
 ARC-10316 871-10231 01
 Oxygen pressure control for electrolysis cells
 ARC-10250 872-10074 02
 Cell for electrolysis of water vapor
 ARC-10521 872-10166 03
 Space-suit carbon dioxide absorption system: A concept
 ARC-10546 872-10168 05
 Aircrew oxygen system
 ARC-10247 872-10195 05
 Hydrogen eliminator
 ARC-10408 872-10208 03
 Counter lung
 ARC-10248 872-10219 05
 Water cavity degasser for electrolysis cells
 ARC-10244 872-10246 03
 Oxygen reclamation with solid oxide electrolytes
 ARC-10487 872-10273 03
 Method to determine vented electrochemical cell quality
 GSFC-11216 872-10396 04
 Gas-operated actuator: A concept
 NPO-11369 873-10133 03
 Catalytic reactor with disposable cartridge
 ARC-10747 873-10376 04
- ELECTROLYTES**
 Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 870-10021 01
 Mechanism of operation of the TFE-bonded gas-diffusion electrode
 HQ-10536 870-10059 01
 Properties of nonaqueous electrolytes
 LEWIS-11017 870-10080 04
 Foaming-electrolyte fuel cell
 HQ-10147 870-10097 01
 Solubility of non-polar gases in electrolyte solutions
 LEWIS-11052 870-10114 04
 High energy density electrochemical cell
 LEWIS-10969 870-10151 01
 Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
 HQ-10379 870-10246 02
 Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
 MSC-13174 870-10277 01
- Coulometer battery state-of-charge indicator
 LEWIS-11083 870-10323 01
 Suppression of zinc dendrites in zinc electrode power cells
 HQ-10550 870-10434 02
 Carbon dioxide concentrator
 ARC-10245 872-10194 05
 Fabrication of large ceramic electrolyte disks
 ARC-10320 872-10202 03
 Improved silver-zinc battery-terminal seals
 LEWIS-11615 872-10581 06
 Improved biomedical electrode
 MSC-13648 872-10642 05
 Battery activation system
 ARC-10832 874-10056 03
 Polyelectrolytes with high charge density
 NPO-11918 874-10159 04
- ELECTROLYTIC CELLS**
 Improved apparatus for continuous culture of hydrogen-fixing bacteria
 HQ-09000 870-10001 05
 Suppression of zinc dendrites in zinc electrode power cells
 HQ-10550 870-10434 02
 Crystal growing by electrodeposition from dense gaseous solutions
 NPO-10440 870-10676 04
 Improved reversible coulometer cell
 SAN-10051 871-10176 02
 Electrolysis cell functions as water vapor dehumidifier and oxygen generator
 ARC-10316 871-10231 01
 Oxygen pressure control for electrolysis cells
 ARC-10250 872-10074 02
 Cell for electrolysis of water vapor
 ARC-10521 872-10166 03
 Fabrication of large ceramic electrolyte disks
 ARC-10320 872-10202 03
 Water cavity degasser for electrolysis cells
 ARC-10244 872-10246 03
 Oxygen reclamation with solid oxide electrolytes
 ARC-10487 872-10273 03
 Fabrication techniques for organic electrolyte battery
 AEC-10019 872-10428 08
 Gas-operated actuator: A concept
 NPO-11369 873-10133 03
 Improved fabrication of electrolytic capacitors
 M-FS-23133 874-10294 01
 100-ampere-hour NiCd battery system
 MSC-14774 875-10233 01
- ELECTROMAGNETIC ABSORPTION**
 Electron energy analyzer
 HQ-10373 870-10138 02
 Ambient-light-absorbing screen for front projection
 ERC-90017 870-10472 03
 Vacuum leak detector features higher sensitivity
 ERC-10034 870-10493 03
 Traveling-wave photodetector has sub-nanosecond response
 GSFC-10831 870-10641 02
 Radiant energy absorption enhancement in optical imaging systems
 ARC-10194 871-10112 03

- Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03
- Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
- ELECTROMAGNETIC FIELDS**
- Metal detector system
ARC-10265 B70-10511 01
- Pseudo-saturating power converter
NPO-11368 B72-10042 01
- Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
- Laser beam deflection control: A concept
MSC-13814 B72-10411 02
- Current switch has built-in time delay: A concept
MSC-17324 B72-10453 01
- Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03
- Ferrofluid separator for nonferrous scrap separation
LANGLEY-11523 B73-10463 07
- ELECTROMAGNETIC INTERFERENCE**
- Diffusion filter eliminates fringe effects of coherent laser light source
NPO-10417 B70-10226 03
- The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03
- Holographic analysis of thin films
M-FS-20823 B70-10654 08
- Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
- Laser vibration analyzer
XAC-01670 B71-10249 03
- Probes for measuring noise current in an electronic cable
NPO-13123 B73-10454 02
- ELECTROMAGNETIC MEASUREMENT**
- Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 B72-10665 03
- Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- ELECTROMAGNETIC NOISE**
- Thermoelectric radiometer
ARC-10138 B70-10056 02
- Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
- Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 B71-10236 03
- High noise immunity one shot
ARC-10137 B72-10047 01
- Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02
- Signal to noise measurement circuit
GSFC-11239 B72-10102 01
- Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02
- Potentiometer, constant tension and lubrication device
KSC-10723 B72-10541 02
- Sampling command generator corrects for noise and dropouts in recorded data
NPO-11886 B73-10390 01
- ELECTROMAGNETIC PROPERTIES**
- Electromagnetic connector
JSC-17420 B73-10125 07
- ELECTROMAGNETIC PUMPS**
- Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept
NPO-10755 B70-10090 07
- High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08
- Advanced high-temperature electromagnetic pump
LEWIS-11283 B72-10537 07
- Magnetocaloric pump
LEWIS-11672 B73-10124 07
- Implantable prosthetic pump boosts blood pressure: A concept
NPO-13626 B75-10177 05
- ELECTROMAGNETIC RADIATION**
- General technique for measurement of refractive index variations
HQ-10359 B70-10064 01
- Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
- Non-symmetrical two dimensional scattering program
NPO-11576 B71-10007 09
- Symmetrical two dimensional scattering program
NPO-11578 B71-10008 09
- Radiation diffraction calculation program /DIFF2/
GSFC-11422 B71-10462 09
- Conical electromagnetic radiation flux concentrator
M-FS-21613 B72-10147 03
- Vibrating ribbon bolometer: A concept
XAC-10768 B72-10170 03
- Simple dynamic electromagnetic radiation detector
LEWIS-11159 B72-10227 03
- Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03
- Wide-range nuclear magnetic resonance detector
LEWIS-11513 B72-10478 03
- The thin film microwave iris
LANGLEY-10511 B72-10548 02
- Proposed electromagnetic wave energy converter
GSFC-11394 B73-10185 01
- Laser scanner for testing semiconductor chips
M-FS-22693 B73-10327 02
- Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02
- ELECTROMAGNETIC SCATTERING**
- Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
- Reflecting heat shields made of microstructured fused silica
ARC-10949 B75-10144 04
- ELECTROMAGNETIC SHIELDING**
- Flat conductor cable connector with contact separation seal
M-FS-20757 B70-10387 01
- RF shielded connectors
GSFC-11215 B73-10509 01
- Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02
- ELECTROMAGNETIC WAVE FILTERS**
- Improved protection for silicon solar cells
LEWIS-11065 B70-10706 08
- Phase locking of field sequential color wheel for small TV camera
MSC-13857 B71-10326 02
- ELECTROMAGNETIC WAVE TRANSMISSION**
- Analysis and optimization of an omnidirectional direction-finding system
M-FS-14346 B70-10112 02
- Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01
- Beam squint correction for a duplex, retrodirective phased array
GSFC-11023 B71-10444 02
- New pulsing technique may improve radar ranging systems
ARC-10600 B72-10564 02
- ELECTROMAGNETISM**
- Linear accelerator: A concept
KSC-10618 B72-10636 06
- ELECTROMAGNETS**
- A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
- Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
- Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06
- Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06
- Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
- New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
- Electromagnetic rheometer
ARC-10525 B72-10416 04
- Ferrofluid separator for nonferrous scrap separation
LANGLEY-11523 B73-10463 07
- Improved magnetic suspension technique
GSFC-11079 B74-10254 03
- Single radial magnetic bearing: A concept
GSFC-11978 B75-10251 06
- Two-directional active damper
LANGLEY-11815 B75-10259 06
- ELECTROMECHANICAL DEVICES**
- New transverse piezoresistance and pinch effect electromechanical transducers - A concept
ERC-10088 B70-10075 01
- Safe/armed explosive squib
XLA-10372 B70-10328 01
- Electronically controlled motor drive system has ultra-high reliability and long lifetime
GSFC-10065 B70-10346 02
- Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 B70-10348 07
- Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02

- Saturable-reactor motor starter reduces line voltage fluctuations
M-FS-18921 B71-10013 01
- Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
- Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
- Distribution and metering system for soil samples
ARC-10429 B71-10481 07
- Current switch has built-in time delay: A concept
MSC-17324 B72-10453 01
- Improved measurement of depth perception
M-FS-14133 B72-10730 05
- Magnetic particle clutch controls servo system
JSC-17136 B73-10041 06
- Master/slave manipulator system
ARC-10756 B73-10496 06
- ELECTROMECHANICS**
A hybrid electromechanical solid state switch for ac power control
MSC-14005 B72-10018 02
- ELECTROMETERS**
Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03
- Advances in electrometer vacuum tube design
GSFC-10729 B70-10696 01
- Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
- Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02
- Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01
- ELECTROMOTIVE FORCES**
High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- Saturable-reactor motor starter reduces line voltage fluctuations
M-FS-18921 B71-10013 01
- Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
- Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
- ELECTROMYOGRAPHY**
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05
- ELECTRON AVALANCHE**
A sensitive image intensifier which uses inert gas
LRL-10024 B72-10312 03
- ELECTRON BEAM WELDING**
Improved electron-beam welding technique
M-FS-20714 B70-10127 08
- Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08
- Improved welding of Rene-41
M-FS-18821 B70-10367 08
- Improved electron beam welding technique
M-FS-20753 B70-10412 08
- Nondestructive assessment of penetration of electron-beam welds
MSC-15955 B70-10466 08
- Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
- Technique for in-place welding of aluminum backed up by a combustible material
LEWIS-11328 B71-10257 08
- Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08
- Portable electron beam weld chamber
MSC-17738 B72-10338 06
- Joining porous components to solid metal structures
LEWIS-11259 B72-10754 08
- Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
LEWIS-11610 B73-10206 03
- Closed-circuit television welding-electrode guidance system
M-FS-23026 B74-10150 02
- ELECTRON BEAMS**
Determination of diffusion lengths in silicon by an X-ray method
LEWIS-10984 B70-10150 01
- Vapor feeding of liquid metal cathodes
HQ-10213 B70-10168 03
- Luminescent screen composition and apparatus
ERC-10010 B70-10440 01
- Multilayer screen gives cathode ray tube high contrast
ERC-10217 B70-10454 01
- Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02
- Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
- Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04
- High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
- Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
- Electron beam chemistry produces high purity metals
LEWIS-11639 B72-10439 04
- Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
- Dual field alignment display and control for electron micropattern generator
M-FS-22118 B72-10646 01
- Prevention of cathode damage from positive ion bombardment
HQ-10688 B72-10654 03
- Two-speed deflection system for electron micropattern generator
M-FS-22117 B72-10668 02
- Technique for refocusing, decompressing, and conditioning spent electron beams
LEWIS-11617 B72-10727 03
- Design and fabrication of an experimental image forming light modulator
M-FS-22547 B73-10182 03
- Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
LEWIS-11610 B73-10206 03
- Collimation of electron and X-ray beams using zeolite crystals
NPO-13557 B75-10329 03
- ELECTRON BOMBARDMENT**
Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03
- Improved electron emitter
LEWIS-10814 B71-10388 03
- Device for measuring electric fields
ARC-10164 B72-10148 03
- Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01
- A visual-display and storage device
GSFC-10901 B72-10647 02
- Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03
- ELECTRON CAPTURE**
Negative ion spectrometry for detecting nitrated explosives
NPO-13082 B74-10276 02
- ELECTRON DENSITY (CONCENTRATION)**
P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
- Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
M-FS-21924 B72-10316 01
- Measurement of electron density and temperature in plasmas
ARC-10598 B72-10563 03
- ELECTRON DENSITY PROFILES**
High-speed spectrograph for shock tube studies
ARC-10772 B73-10501 03
- ELECTRON DIFFUSION**
Ohmic diode
HQ-10534 B70-10200 01
- ELECTRON DISTRIBUTION**
High-speed spectrograph for shock tube studies
ARC-10772 B73-10501 03
- ELECTRON EMISSION**
A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01
- High temperature ion source
ERC-10197 B70-10379 03
- Thermionic triode generates ac power
ERC-10284 B70-10499 01
- Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
- Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 B70-10620 03
- Improved electron emitter
LEWIS-10814 B71-10388 03
- Cathode for use with low density gases
HQ-10687 B72-10530 01
- Prevention of cathode damage from positive ion bombardment
HQ-10688 B72-10654 03
- Design method for minimizing RF voltage breakdown
NPO-13408 B73-10520 01
- Integrated structure vacuum tube: A Concept
ARC-10445 B74-10110 01
- Improved channel multiplier for radiation-and-particle detectors
NPO-12128 B74-10275 03

ELECTRON ENERGY

- Electron energy analyzer
 HQ-10373 B70-10138 02
 Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
 M-FS-21924 B72-10316 01

ELECTRON GUNS

- Luminescent screen composition and apparatus
 ERC-10010 B70-10440 01
 Color television system using single gun color cathode ray tube
 ERC-10098 B70-10464 02
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Portable electron beam weld chamber
 MSC-17738 B72-10338 06
 Metastable atom probe for measuring electron beam density profiles
 M-FS-21593 B72-10485 03

ELECTRON IMPACT

- Photoionization mass spectrometer
 HQ-10167 B70-10113 03

ELECTRON IRRADIATION

- Irradiation of MOS-FET devices to provide desired logic functions
 GSFC-11061 B72-10719 01

ELECTRON MICROSCOPES

- Rene 41 heat treatment electron microscopy
 M-FS-18633 B70-10081 04
 An investigation of the strength of aluminum wire used in integrated circuits
 NPO-11219 B70-10275 01
 Electron fractography used to examine nickel-base alloys
 M-FS-18649 B70-10571 04
 Optical contamination during thermal testing in vacuum
 M-FS-20736 B70-10659 03
 Annular objective apertures improve resolution of electron microscopes
 ARC-10448 B72-10171 03
 Silver stain for electron microscopy
 ARC-10661 B72-10415 05
 Analysis of microsize particulates
 ARC-10647 B72-10565 04
 Dual field alignment display and control for electron micropattern generator
 M-FS-22118 B72-10646 01
 Scanning-electron-microscope used in real-time study of friction and wear
 LEWIS-12448 B75-10064 06
 Microcircuit testing and fabrication, using scanning electron microscopes
 M-FS-23159 B75-10304 01

ELECTRON MOBILITY

- Optimum doping achieves high quantum yields in GaAs photoemitters
 M-FS-20962 B71-10357 03

ELECTRON OPTICS

- Soft X-ray lasers using distributed-feedback reflection: A concept
 NPO-13532 B75-10239 03

ELECTRON PARAMAGNETIC RESONANCE

- Properties of nonaqueous electrolytes
 LEWIS-11017 B70-10080 04

- A dual-beam actinic light source for photosynthesis research
 ARC-10351 B72-10205 05

ELECTRON PLASMA

- Laser frequency modulation with electron plasma
 AEC-10079 B72-10373 03

ELECTRON RADIATION

- Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
 GSFC-10835 B71-10375 08
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04

ELECTRON TRAJECTORIES

- Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03

ELECTRON TRANSITIONS

- Energy levels and transition probability matrix elements of ruby for maser applications
 NPO-11687 B71-10308 09

ELECTRON TUBES

- Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03
 Roll function in a flight simulator
 ARC-10557 B72-10417 02
 Event-sequence detector
 NPO-11703 B73-10278 01

ELECTRONIC CONTROL

- Slide checkout console
 MSC-12318 B70-10290 02
 Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Improved wax mold technique forms complex passages in solid structures
 XLA-07829 B71-10063 05
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06
 Illumination control system
 ARC-10527 B72-10167 02
 Feedback control of variable conductance heat pipes
 ARC-10460 B72-10169 03
 Improved feedback shift register
 NPO-10351 B72-10226 01
 An automatic lightning detection and photographic system
 KSC-10728 B73-10043 02
 Self-protecting solid state isolated switch
 LEWIS-12268 B74-10069 01

ELECTRONIC EQUIPMENT

- Device for printing alphanumeric listings and digital data plots
 LEWIS-10954 B70-10002 02
 Buck-boost dc voltage regulator
 GSFC-10735 B70-10005 01
 Telemetry receiver
 NPO-10746 B70-10008 02
 Solid state switch provides high input-to-output isolation
 HQ-10488 B70-10022 01
 Compact apparatus for photogeneration of hydrated electrons
 ARG-10487 B70-10036 03
 High-resolution spectral analysis
 NPO-10748 B70-10039 01

- High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01
 Thermoelectric radiometer
 ARC-10138 B70-10056 02
 Improved low cost ac-to-dc converter
 NPO-11055 B70-10076 01
 Signal conditioner circuit for photomultiplier tube
 XLA-10773 B70-10096 01
 Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 B70-10106 03
 Detection and location of metal fragments in the human body
 M-FS-14797 B70-10107 05
 Electronic sleep analyzer
 MSC-13282 B70-10110 02
 A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01
 Applications of gap welding
 M-FS-20715 B70-10155 08
 Precision full-wave rectifier
 ARC-10101 B70-10161 02
 Electronic position indicator for latching solenoid valves
 LEWIS-10926 B70-10174 01
 Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 LEWIS-10515 B70-10185 04
 Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Fuse-holder concept expedites electronic component changes
 M-FS-20615 B70-10191 01
 Ohmic diode
 HQ-10534 B70-10200 01
 Television camera as a scientific instrument
 NPO-11164 B70-10209 03
 Simplified method for measuring the impedance of RF power sources - A concept
 NPO-10734 B70-10212 02
 Ultraportable reference pulser for high-resolution spectrometers
 ARG-10364 B70-10216 01
 Neutron-image intensifier
 ARG-10249 B70-10240 03
 Prevention of cracking of soldered joints in electronic assemblies
 M-FS-20544 B70-10241 08
 A miniature 1/4-inch diameter 24-pin plug and receptacle
 LANGLEY-10607 B70-10249 01
 The effects of nuclear power generators upon electronic instrumentation
 NPO-11217 B70-10272 03
 Temperature-independent resistor for microelectronic circuits
 HQ-10382 B70-10276 01
 One-shot multivibrator with complementary metal-oxide-semiconductor components
 MSC-13492 B70-10305 01
 Self-contained miniature electronics transceiver provides voice communication in hazardous environment
 KSC-10164 B70-10335 01
 High expansion coefficient glasses can be sealed to common metals
 LEWIS-10698 B70-10429 08

Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide

ERC-10256 B70-10444 04

Wide-range tracking oscillator generates phase and frequency coherent output

M-FS-14518 B70-10451 02

Induction generator produces constant-frequency voltage from variable-speed drive

ERC-10065 B70-10478 02

Growing single crystals in silica gel

ERC-10306 B70-10479 02

Electronic scanning of 2-channel monopulse patterns

GSFC-10299 B70-10485 02

Technique for analyzing human respiratory process

MSC-13436 B70-10528 05

Intruder detection system

ARC-10097 B70-10638 02

Electronic strain-level counter

LANGLEY-10756 B70-10716 02

Active parallel redundancy for electronic integrator-type control circuits

NUC-10231 B71-10040 01

EKG isolator

M-FS-21236 B71-10124 05

Electronic ripple indicator

KSC-10162 B71-10170 01

Preparation of homogeneous vitreous materials for electronic and optical devices

HQ-10670 B71-10172 04

Radiographic inspection specifications for electronic components

M-FS-20723 B71-10438 01

Development of conformal coating materials

M-FS-21393 B71-10483 04

Peak acceleration limiter

NPO-10556 B72-10007 01

Improved audio reproduction system

ARC-10404 B72-10059 01

Quartz crystal microbalance use in biological studies

NPO-11346 B72-10243 05

Dual redundant core memory systems

MSC-13993 B72-10261 09

Packaging concept for LSI beam lead integrated circuits

M-FS-21374 B72-10329 07

Portable electron beam weld chamber

MSC-17738 B72-10338 06

A closed loop cryogenic environment pressure regulating system

MSC-13880 B72-10390 02

Roll function in a flight simulator

ARC-10557 B72-10417 02

Very high speed direct-readout, control and recording system

M-FS-20658 B72-10442 02

Systems effectiveness evaluation program

HQ-10306 B72-10458 09

Wide-range nuclear magnetic resonance detector

LEWIS-11513 B72-10478 03

A system for early warning of bearing failure

M-FS-21877 B72-10494 06

Interferometric measurement of the velocity of radiating particles

HQ-10371 B72-10495 03

Pulse-width-modulated device for precision temperature control

NPO-11407 B72-10507 02

Electronic circuit detects left ventricular ejection events in cardiovascular system

LEWIS-11581 B72-10512 05

A compact battery powered digital thermometer

MSC-14084 B72-10545 02

Photomultiplier blanking circuit

ARC-10593 B72-10561 01

Remote measurement of the water content of snowpacks

ARC-10651 B72-10567 03

An absentee monitoring device

KSC-10668 B72-10578 01

A range expanding signal conditioner

M-FS-21720 B72-10639 02

Dual field alignment display and control for electron micropattern generator

M-FS-22118 B72-10646 01

Speech therapy and voice recognition instrument

HQ-10628 B72-10652 05

Analytic procedures for determining dimensional redundancies in electronic devices

HQ-10709 B72-10656 09

Two-speed deflection system for electron micropattern generator

M-FS-22117 B72-10668 02

An improved data transfer and storage technique for hybrid computation

M-FS-22043 B72-10680 02

Low distortion automatic phase control circuit

M-FS-21671 B72-10682 02

New detection method for rolling element and bearing defects

M-FS-21911 B72-10689 06

Technique for refocusing, decompressing, and conditioning spent electron beams

LEWIS-11617 B72-10727 03

Design of microstrip components by computer

LANGLEY-11210 B72-10741 01

Automated analysis of blood pressure measurements (Korotkov sound)

MSC-13999 B72-10756 05

Oven temperature controller for electronic components

GSFC-11466 B73-10052 02

Positive contact resistance soldering unit

KSC-10242 B73-10145 02

Determining distance to lightning strokes from a single station

KSC-10698 B73-10178 02

Junction range finder

KSC-10108 B73-10191 02

Balloon-borne package temperature controller

GSFC-11620 B73-10192 03

Manufacture and quality control of interconnecting wire harnesses

M-FS-22511 B73-10211 01

A fault-tolerant clock

JSC-12531 B73-10218 09

Dynamic power load simulator

JSC-14285 B73-10305 02

Nomograph for prediction of

RF-breakdown voltages

NPO-11819 B73-10386 01

Versatile electronic load

NPO-13202 B73-10458 03

Plug-in integrated/hybrid circuit

M-FS-24470 B73-10476 01

RF shielded connectors

GSFC-11215 B73-10509 01

Low cost instrumentation amplifier

LEWIS-12222 B74-10015 01

Cushion module for stowing electronic equipment

ARC-10779 B74-10073 04

Reliability data for electronic and electromechanical components: A report

NPO-13153 B74-10280 01

Improved fabrication of electrolytic capacitors

M-FS-23133 B74-10294 01

Shock and vibration isolation mount for small electronic components

NPO-13253 B75-10049 01

ELECTRONIC EQUIPMENT TESTS

Acoustic vibration test detects

intermittent electrical discontinuities

MSC-15158 B70-10118 01

A vapor barrier for cold testing printed circuit cards

M-FS-15115 B70-10172 01

Transistor current and voltage limiting switch

NPO-11166 B70-10414 01

Load cell for thermionic converter tests

LEWIS-11068 B70-10470 01

A power semiconductor test circuit with reduced power requirements

LEWIS-11175 B70-10498 01

Fault detection monitor circuit provides "self-heal capability" in electronic modules

- A concept

KSC-10394 B70-10515 01

Automatic cross-sectioning and monitoring system locates defects in electronic devices

GSFC-11221 B71-10221 01

Voter comparator switch provides fail safe data communications system - A concept

MSC-13932 B71-10504 02

Specification guidelines for hybrid microcircuits

M-FS-22090 B72-10474 01

JPL transient radiation analysis by computer program (JTRAC)

NPO-13470 B75-10053 09

Portable headset microphone checker

KSC-10699 B75-10254 02

Monitor for checking electric-field meters

KSC-10851 B75-10296 02

ELECTRONIC FILTERS

Buck-boost dc voltage regulator

GSFC-10735 B70-10005 01

Design procedure for improved active filters

M-FS-20445 B70-10238 02

A self-tuning filter

ARC-10264 B70-10337 01

Color television system using single gun color cathode ray tube

ERC-10098 B70-10464 02

Electronic device increases threshold sensitivity and removes noise from FM communications receiver

MSC-12165 B71-10091 02

Data-matched filter

JSC-14264 B73-10449 02

ELECTRONIC MODULES

Transistor current and voltage limiting switch

NPO-11166 B70-10414 01

Fault detection monitor circuit provides "self-heal capability" in electronic modules

- A concept

KSC-10394 B70-10515 01

- Biomedical recording system
MSC-13653 B70-10697 05
Microwave dosimeter - A concept
HQ-10407 B71-10075 01
Ceramic wiring board increases
packaging density of electronic modules
MSC-13497 B71-10084 01
High density electronic packaging module
with improved cooling assembly
MSC-13639 B71-10088 01
Broadband RF-distribution amplifier
NPO-11401 B72-10245 01
Improved thermally conducting electron
transfer polymers
GSFC-11304 B72-10291 04
Protective encapsulation of implantable
biotelemetry units
ARC-10514 B72-10301 05
Acoustical analysis system
GSFC-11087 B72-10751 02
Advanced-priority interrupt module
NPO-13067 B74-10165 02
Depositing spacing layers on magnetic
film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
- ELECTRONIC PACKAGING**
Packaging concept for LSI beam lead
integrated circuits
M-FS-21374 B72-10329 07
Specification guidelines for hybrid
microcircuits
M-FS-22090 B72-10474 01
Two autowire versions for CDC-3200 and
IBM-360
GSFC-11526 B72-10608 09
A new packaging and testing concept
for microelectronic components
M-FS-20936 B73-10109 01
Welded printed circuit (pc) stick
GSFC-11773 B73-10393 01
Hermetic-coaxial package design for
microwave transistors
GSFC-10791 B73-10427 01
Nondestructive leak testing
LANGLEY-11561 B73-10464 06
New standoffs provide high-reliability
component mounting for printed wiring
boards
LANGLEY-11176 B73-10512 01
Toroidal equipment packaging
ARC-10828 B74-10055 03
Cushion module for stowing electronic
equipment
ARC-10779 B74-10073 04
Microelectronics packaging technique: A
concept
MSC-19399 B74-10192 01
Improved circuit-board interconnectors
MSC-12661 B74-10239 01
Low-temperature electrostatic
silicon-to-silicon seals using sputtered
borosilicate glass
LANGLEY-11589 B74-10263 08
Open coil structure for
bubble-memory-device packaging
LANGLEY-11704 B75-10219 01
Variable-gap bias structure for magnetic
bubble memory package
LANGLEY-11765 B75-10221 01
- ELECTRONIC RECORDING SYSTEMS**
Automatic reference level control for an
antenna pattern recording system
M-FS-20257 B71-10014 01
- ELECTRONIC TRANSDUCERS**
Self testing and repairing computer - A
concept
NPO-10567 B70-10452 09
- Radial rotating antenna-feed system
GSFC-11013 B71-10025 01
Dual-channel circuit conditions/amplifies
transducers' inputs and outputs
MSC-15712 B71-10069 01
Improved epitaxial process for fabricating
silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- ELECTRONICS**
Performance-limit criteria for the design
of fast-response servo-actuation systems
LEWIS-11022 B70-10152 02
Hydraulic actuator motion limiter ensures
operator safety
ARC-10131 B71-10233 07
Beam lead forming tool
M-FS-22133 B73-10098 07
- ELECTRONS**
Compact apparatus for photogeneration
of hydrated electrons
ARG-10487 B70-10036 03
Electron energy analyzer
HQ-10373 B70-10138 02
Improved cover for cadmium sulfide solar
cells
LEWIS-11003 B70-10584 01
Silicon solar cells improved by lithium
doping
NPO-11390 B70-10585 04
Circuit modification aids in atomic
particle discrimination
LEWIS-11155 B70-10689 01
Improved protection for silicon solar
cells
LEWIS-11065 B70-10706 08
High efficiency collector for microwave
tubes
LEWIS-11192 B72-10259 03
A visual-display and storage device
GSFC-10901 B72-10647 02
- ELECTROPHORESIS**
Reproductive cell separation: A
concept
M-FS-22627 B73-10198 05
Improved design of electrophoretic
equipment for rapid sickle-cell-anemia
screening
GSFC-11794 B73-10225 02
Zeta potential control for electrophoresis
cells
M-FS-22333 B73-10260 04
Electrophoresis separator combining
centrifugal separation
M-FS-21396 B73-10328 04
Methods for improved resolution of flow
electrophoresis cells
M-FS-22223 B74-10032 04
- ELECTROPHYSIOLOGY**
Multimode ergometer system
M-FS-21044 B71-10107 05
EKG isolator
M-FS-21236 B71-10124 05
- ELECTROPLATING**
Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
Dual current readout for precision
plating
MSC-15673 B70-10392 01
Ultra-flexible biomedical electrodes and
wires
ARC-10268 B70-10420 05
Fixture for plating stripped conductors
of flat conductor cables /FCC/
M-FS-20122 B70-10719 08
Improved reversible coulometer cell
SAN-10051 B71-10176 02
- Rapid method for sampling metals for
materials identification
MSC-17332 B71-10320 04
Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Cadmium plated steel caps seal anodized
aluminum fittings
M-FS-20137 B71-10355 05
Fixture for multiple-FCC chemical
stripping and plating
M-FS-20237 B71-10420 08
Cold-blade stripper for polyimide and TFE
insulation on FCC
M-FS-20115 B71-10460 08
Copper/nickel eutectic brazing of
titanium
ARC-10337 B71-10525 08
Piezoelectric actuator uses
sequentially-excited multiple elements: A
concept
NPO-11527 B72-10096 01
Annular objective apertures improve
resolution of electron microscopes
ARC-10448 B72-10171 03
High-temperature ceramic-to-ceramic
seals
ARC-10319 B72-10199 04
Humidity resistant solar cell contacts
HQ-10674 B72-10517 04
Selective coating for collecting solar
energy on aluminum
M-FS-22562 B73-10527 04
Commercially available black chrome is
an effective solar collector coating
LEWIS-12159 B74-10121 04
Survey of coatings for solar collectors
LEWIS-12510 B75-10067 04
Induction heating simplifies metal
evaporation for ion plating
LEWIS-12595 B75-10288 03
- ELECTROPLETHYSMOGRAPHY**
Finger recording electrode system for
electrical impedance plethysmograph
ARC-10816 B74-10172 05
- ELECTROPOLISHING**
Superconducting "transistor" acts as
high-speed switch
HQ-10547 B70-10082 01
Solid state welding of
dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
- ELECTROSTATIC CHARGE**
Improved charged-particle analyzer - A
concept
XAC-05506 B71-10283 03
- ELECTROSTATIC PROBES**
Mechanical positioning device for
Langmuir probe
NPO-11626 B73-10034 06
Electrostatically controlled heat shutter
NPO-11942 B74-10161 03
- ELECTROSTATIC SHIELDING**
Thermoelectric radiometer
ARC-10138 B70-10056 02
- ELECTROSTATICS**
Solubility of non-polar gases in
electrolyte solutions
LEWIS-11052 B70-10114 04
Improved electron emitter
LEWIS-10814 B71-10388 03
Low-temperature electrostatic
silicon-to-silicon seals using sputtered
borosilicate glass
LANGLEY-11589 B74-10263 08

ELEMENTARY PARTICLES

A study of radiation environment in space and its biological effects
HQ-10798 872-10662 03

ELEVATION

Electronic scanning of 2-channel monopulse patterns
GSFC-10299 870-10485 02

ELEVATION ANGLE

Expanded sun-look angle program
MSC-13176 870-10602 09
Eye point-of-regard system
ARC-10360 871-10476 05

ELEVATORS (LIFTS)

A cable stabilizer for outdoor elevators
KSC-10513 872-10283 07
A tool for measuring elevator cable tension
KSC-10708 872-10509 07

ELLIPSES

Motion compensator for holographic motion picture camera
M-FS-22517 873-10434 03
Photography of random motion with a holographic camera
M-FS-22537 873-10435 03

ELLIPSOIDAL MEASUREMENTS

Ellipsometer measurements of epitaxial GaAs layers: A concept
M-FS-23238 875-10230 01

ELLIPTICAL ORBITS

Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 870-10442 03
New data acquisition system records bearing measurements directly
LEWIS-10510 870-10503 06
New procedure for determining minimum time orbit transfers
M-FS-14804 871-10376 09
Analysis of orbital heat transfer
ARC-10842 874-10115 02

ELONGATION

Tensile creep-rate of pyrolytic carbon
NPO-11254 870-10100 04
Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
M-FS-18790 870-10213 04
Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 870-10369 04
Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 870-10506 04
Electrothermal fracturing of tensile specimens
NUC-10185 870-10566 07
Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 870-10582 06
Automatic, computerized testing of bolts
NPO-11090 870-10657 06
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 871-10098 07
Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 871-10261 04
Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 872-10262 04

Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 872-10346 04

Leaching of nitroso rubber material removes uncured polymer
MSC-17185 872-10449 04

A monostrain test apparatus
M-FS-24221 872-10679 06
Variable load indicator
M-FS-21728 873-10335 07

ELUTION

A method of isolating organic compounds present in water
AEC-10010 872-10044 04

EMBOLISMS

Combination syringe provides air-free blood samples
MSC-12320 870-10545 05

EMBRITTLMENT

The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 870-10146 04
Effects of high pressure hydrogen on metals
M-FS-18612 870-10162 04
Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
M-FS-18753 870-10364 04
Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 870-10366 04
Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 870-10621 04
Electroplating on titanium alloy
M-FS-21251 871-10338 08
Advanced alloy design technique: High temperature cobalt base superalloy
LEWIS-10436 872-10514 04
Hydrogen-environment embrittlement of metals: A study
M-FS-22540 873-10168 04
Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 874-10222 04

EMERGENCIES

Aircraft-crash-locating transmitter features design improvements
M-FS-16609 871-10213 02

EMERGENCY TECHNIQUES

Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 870-10680 03
Breathing-metabolic simulator
HQ-10766 872-10657 05

EMERGENCY LIFE SUSTAINING SYSTEMS

Progress in research on chlorate candle technology
MSC-13409 870-10258 04
Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 870-10680 03
Stable, inflatable life raft for high seas rescue operations
MSC-12393 871-10167 05
Emergency descent device
M-FS-23074 874-10226 05

EMISSION

Vapor feeding of liquid metal cathodes
HQ-10213 870-10168 03
Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 871-10131 03

Quick release acoustic sensor holding fixture
MSC-17457 872-10076 02
Airflow distribution control for improved turbine engine performance
LEWIS-11593 872-10178 07

EMISSION SPECTRA

Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 870-10177 04
Simplified procedure for emission spectrochemical analysis
LEWIS-10985 871-10359 04
Liquid-helium-cooled Michelson interferometer
ARC-10554 872-10217 03
PPUAS--photopeak unfolding and self-shielding program
NPO-13188 873-10087 09

EMISSIONIVITY

Directional control of radiant heat
LEWIS-90237 870-10321 03
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 871-10077 04
Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 871-10115 09
Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 871-10357 03
Photoemissive coating
M-FS-22003 872-10638 08

EMITTANCE

Improved thermal paint formulation
M-FS-14706 871-10180 03
Determination of radiation interchange factors
MSC-13475 871-10295 09
Program for determination of radiation interchange factors
MSC-17563 872-10071 09

EMITTERS

Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 870-10181 01
Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 870-10218 01
Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 870-10230 09
Power semiconductor device with negative thermal feedback
HQ-10577 870-10262 01
Integrated circuit random-access memory decoder
ERC-10211 870-10372 01
Load cell for thermionic converter tests
LEWIS-11068 870-10470 01
Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 870-10534 01
Subminiature transducer measures unsteady pressures
ARC-10349 871-10114 01
Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 871-10275 01
Discrete-component S-band power amplifier
GSFC-11248 871-10365 01
Improved electron emitter
LEWIS-10814 871-10388 03
Coaxial inverted geometry epitaxial transistor
ARC-10330 872-10056 01

- Frequency switch keyed oscillator
ARC-10412 B72-10124 01
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
- EMULSIONS**
Cost-reducing multipurpose microfilm card
KSC-10508 B70-10071 03
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
- ENAMELS**
Refractory porcelain enamel passive-thermal-control coating for high-temperature superalloys
M-FS-22324 B73-10215 04
New tooth enamel from brushite crystals
ERC-10338 B74-10199 05
Survey of coatings for solar collectors
LEWIS-12510 B75-10067 04
- ENCAPSULATING**
Sorption vacuum trap
ERC-90051 B70-10449 06
Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
Halogenation of microcapsule walls
ARC-10410 B72-10161 04
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
Improved thermally conducting electron transfer polymers
GSFC-11304 B72-10291 04
Protective encapsulation of implantable biotelemetry units
ARC-10514 B72-10301 05
Glass encapsulation provides extra protection for IC semiconductor devices
M-FS-21310 B73-10054 01
Nonflammable potting-encapsulating and conformal coating compounds
JSC-14164 B73-10102 04
Silicon switching transistor with high power and low saturation voltage
NPO-11565 B73-10295 01
RF shielded connectors
GSFC-11215 B73-10509 01
- ENCLOSURES**
Foldable patterns form construction blocks
MSC-13860 B71-10523 08
- END PLATES**
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
- ENDOTHERMIC REACTIONS**
Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
Comparison of catalyst activity
ARC-10493 B72-10201 04
- ENERGY ABSORPTION**
Dry-frictional shock absorber
NPO-11212 B70-10040 07
Lightweight, high-strength, reinforced plastic tube-fringing die
LANGLEY-10126 B70-10273 04
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
Improved thermal paint formulation
M-FS-14706 B71-10180 03
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Energy absorber uses expanded coiled tube
AEC-10044 B72-10239 06
Energy absorbing system for mechanical impacts
NPO-10671 B72-10712 06
Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
Commercially available black chrome is an effective solar collector coating
LEWIS-12159 B74-10121 04
- ENERGY ABSORPTION FILMS**
Chuck for delicate drills
ARC-10660 B72-10414 07
Applying high-emittance and solar-absorptance coating to aluminum
LANGLEY-10151 B73-10238 04
- ENERGY CONVERSION**
Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
Improved cover for cadmium sulfide solar cells
LEWIS-11003 B70-10584 01
Silicon solar cells improved by lithium doping
NPO-11390 B70-10585 04
Piezoelectric transducer mosaic
ARC-10509 B72-10014 01
Proposed electromagnetic wave energy converter
GSFC-11394 B73-10185 01
Laser energy converted into electric power
NPO-13308 B73-10353 02
Solar-energy absorber: Active infrared (IR) trap
M-FS-22743 B73-10484 06
Solar-energy absorber: Active infrared (IR) trap without glass
M-FS-22744 B73-10485 06
Metal tube used as solar engine
ARC-10461 B73-10493 03
Solar-energy conversion system provides electrical power and thermal control for life-support systems
M-FS-21628 B73-10524 06
Mechanical solar motor: A concept
M-FS-23062 B74-10292 07
Zener-regulated solar array/battery power system
M-FS-23195 B75-10162 02
- ENERGY CONVERSION EFFICIENCY**
Thermionic triode generates ac power
ERC-10284 B70-10499 01
Comparative performance of twenty-three types of flat plate solar energy collectors
LEWIS-12511 B75-10189 03
- ENERGY DISSIPATION**
A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 B70-10287 07
Prediction of windage power loss in alternators
LEWIS-10939 B71-10074 06
Effect of size on cracking of materials
NPO-11602 B71-10158 04
- Landing dynamics program for impact attenuating vehicles / LANDIT/
NPO-10840 B71-10472 09
Improved high-performance shock tube
NPO-11885 B72-10242 03
High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
Driver circuit for inductive loads
ARC-10073 B72-10268 01
Balsa wood as an energy dissipator
NPO-11839 B73-10388 04
- ENERGY DISTRIBUTION**
Electron energy analyzer
HQ-10373 B70-10138 02
Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01
Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 B72-10004 03
A compact spectroradiometer for solar simulator measurements
HQ-10683 B72-10327 03
- ENERGY LEVELS**
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
- ENERGY SOURCES**
Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 B71-10120 03
Heat-operated cryogenic electrical generator
NPO-13303 B75-10116 03
- ENERGY SPECTRA**
New filter technique improves home television reception
MSC-13729 B71-10141 02
- ENERGY STORAGE**
Load cell for thermionic converter tests
LEWIS-11068 B70-10470 01
Improved high-performance shock tube
NPO-11885 B72-10242 03
High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
A practical solar energy heating and cooling system
M-FS-22563 B73-10156 05
Compact 20-kiloampere pulse-forming-network capacitor bank
LEWIS-12009 B73-10171 01
Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
Radioisotope heater
ARC-10791 B74-10051 03
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ARC-10832 B74-10056 03
Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
Facility for testing solar cells
NPO-11761 B74-10099 02
Solar residential heating and cooling system
M-FS-23260 B75-10165 06

ENERGY TECHNOLOGY

Wind energy utilization: A bibliography
LEWIS-12518 B75-10136 02
An experimental 100 kilowatt wind turbine generator
LEWIS-12509 B75-10147 03

ENGINE TRANSFER

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LEWIS-90237 B70-10321 03
Improved electron beam welding technique
M-FS-20753 B70-10412 08
Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
Chuck for delicate drills
ARC-10660 B72-10414 07
Solar powered absorption cycle heat pump using phase change materials for energy storage
M-FS-21927 B72-10615 06
A practical solar energy heating and cooling system
M-FS-22563 B73-10156 05

ENGINE ANALYZERS

Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09

ENGINE CONTROL

Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06
Solid-state motor control and monitor system
MSC-12721 B75-10316 02

ENGINE COOLANTS

Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09

ENGINE DESIGN

A computer program for calculating design and off-design performance of two- and three-spool turbofans with as many as three nozzles
LEWIS-12011 B73-10245 09
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
Design criteria monograph on axial flow turbines
LEWIS-12376 B75-10009 06
Improved air atomizing splash-groove fuel injector reduces pollutant emissions from turbojet engines
LEWIS-12417 B75-10190 06
A new high temperature noble metal thermocouple pairing
LEWIS-12545 B75-10245 03
Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06
Improved aircraft reaction nozzles
ARC-10906 B75-10284 06

ENGINE FAILURE
Graph for locked rotor current
MSC-15703 B72-10075 06

ENGINE INLETS

Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03

ENGINE NOISE

Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
A theoretical study of aerodynamic noise generation
M-FS-24167 B73-10209 03
Prediction of aircraft noise source and estimation of noise-level contours
ARC-10880 B75-10060 09

ENGINE PARTS

Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04
Electro-chemical grinding
LANGLEY-10801 B72-10744 08
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06
Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03
High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

ENGINE STARTERS

Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07

ENGINE TESTS

Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01
Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 B71-10044 06

ENGINEERING

Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01

ENGINEERING DRAWINGS

New model performance index for engineering design of control systems
HQ-10520 B70-10293 06
Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01
Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08

ENGINES

Molecular sieves control contamination and insulate in thermal regenerators - A concept
GSFC-10910 B70-10424 07
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
Metal tube used as solar engine
ARC-10461 B73-10493 03
Simplified heat engine
NPO-13613 B75-10334 07

ENTHALPY

Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
Psychrometric chart for physiological research
ARC-10394 B71-10470 03
Computer program for natural gas flow through nozzles
LEWIS-11534 B72-10362 09

ENTRAINMENT

Volume-checking tool
KSC-10514 B70-10502 07

ENTROPY

Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04
Computer program for natural gas flow through nozzles
LEWIS-11534 B72-10362 09
A theoretical study of aerodynamic noise generation
M-FS-24167 B73-10209 03
Analyses of unsteady entropic-flow processes
M-FS-24475 B73-10482 03

ENVIRONMENT POLLUTION

Microbial burden prediction model program
NPO-11709 B71-10401 09
Mercury in the environment
AEC-10048 B72-10233 05
Phosphorus in land-water systems
AEC-10049 B72-10429 05

ENVIRONMENT SIMULATION

Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
Criteria for vibration testing
GSFC-10737 B71-10266 06

ENVIRONMENTAL CONTROL

Atmospheric composition affects heat- and mass-transfer processes
HQ-10271 B70-10094 04
Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02
Apparatus tests flexural durability of FCC
M-FS-20113 B71-10458 08
Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Fluidized-bed combustion reduces atmospheric pollutants
AEC-10085 B72-10431 04
Sterile chamber operation with bio-isolator suit system
LANGLEY-11054 B72-10547 05

- Propulsion sizing program
MSC-14016 B72-10605 09
Automation of Bosch reaction for CO2 reduction
M-FS-21674 B72-10666 04
Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
- ENVIRONMENTAL ENGINEERING**
Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 B72-10004 03
Automation of Bosch reaction for CO2 reduction
M-FS-21674 B72-10666 04
- ENVIRONMENTAL RESEARCH**
- SATELLITES**
Microflora in soils of desert regions
NPO-11215 B70-10253 05
- ENVIRONMENTAL TESTS**
Commutating brushes tested in dc motors in dry argon atmospheres
ARG-10243 B70-10045 01
Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04
A vapor barrier for cold testing printed circuit cards
M-FS-15115 B70-10172 01
Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
High-temperature electric stator
LEWIS-10889 B70-10459 01
Frost as an insulator
NUC-11039 B70-10593 03
Human performance measuring device
LANGLEY-10679 B70-10619 05
Development of a silver-zinc battery system
NPO-11444 B70-10718 02
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Environmental effects on silicon solar cells
NPO-11475 B71-10282 02
Standard environmental testing practices
NPO-11567 B72-10101 02
Evaluation of thermal insulation materials
NPO-11586 B73-10020 04
Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04
Combustion products generating and metering device
GSFC-11095 B74-10036 04
- ENVIRONMENTS**
A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05
Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07
Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- Promising composites
M-FS-21126 B71-10217 04
Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
Watertight low-cost electrical connector
LEWIS-11552 B72-10506 01
- ENZYME ACTIVITY**
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05
Stabilization of lactate dehydrogenase
ARC-10415 B72-10062 05
Immobilized phosphorylase for synthesis of polysaccharides from glucose
ARC-10680 B72-10550 04
- ENZYMES**
Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
Insolubilization process increases enzyme stability
ARC-10314 B71-10443 04
Insolubilized enzymes for food synthesis
ARC-10568 B72-10247 04
A reusable prepositioned ATP reaction chamber
HQ-10660 B72-10525 05
Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04
- EPHEMERIDES**
Expanded sun-look angle program
MSC-13176 B70-10602 09
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- EPHEMERIS TIME**
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- EPITAXY**
Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01
Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
Shielding method for polycrystalline and epitaxy growths
M-FS-20162 B71-10434 04
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
A voltage-tunable three-terminal Gunn device
HQ-10783 B72-10518 01
Gate protective device for SOS array
HQ-10745 B72-10755 01
Silicon on sapphire for ion implantation studies
LANGLEY-11415 B73-10522 04
Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
- Ellipsometer measurements of epitaxial GaAs layers: A concept
M-FS-23238 B75-10230 01
- EPOXY COMPOUNDS**
Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
Unidirectional composite stiffening
HQ-10266 B70-10054 04
Design and evaluation of three-phase fibrous composite structures
HQ-10267 B70-10205 04
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
Intumescent coatings as fire retardants
ARC-10099 B70-10450 04
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09
Improved electrical spot terminals
NPO-10034 B72-10492 01
- EPOXY RESINS**
Removal of flowmeter bearings from blind cavities
M-FS-18713 B70-10227 06
Technique for improving hydrodynamic gyro bearings
M-FS-20764 B70-10301 06
Fabricating subscale components for application to full-scale parts
M-FS-20805 B70-10390 07
Accurate reassembly of small broken test specimens
M-FS-16730 B70-10455 07
Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Improved protection for silicon solar cells
LEWIS-11065 B70-10706 08
Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
Promising born/graphite/resin composites
M-FS-21126 B71-10217 04
Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 B71-10261 04
Instant acting adhesive system
MSC-13732 B71-10317 04

- New primers for adhesive bonding of aluminum alloys
M-FS-21387 B71-10488 04
Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
Pressure-probe assembly for wind tunnels
ARC-10569 B72-10248 03
A new vibration dampening adhesive
MSC-17668 B72-10284 04
Fabrication of uniaxial filament-reinforced epoxy tubes for structural application
LANGLEY-10203 B72-10340 04
Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04
Equations to assess the impact resistance of fiber composites
LEWIS-11486 B72-10503 04
New type of trifunctional alcohol
NPO-10714 B72-10553 04
Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06
Large boron--epoxy filament-wound pressure vessels
NPO-11900 B73-10038 08
Vacuum-stripped silicone binder for thermal-control paint
M-FS-21397 B73-10060 04
Production of circular polymer-glass fabric composites
M-FS-22125 B73-10069 04
A new concept for joining dissimilar composites
M-FS-24307 B73-10148 04
Battery cell thermal-conductive coating increases efficiency
LANGLEY-10963 B73-10237 01
Boron--epoxy tubular structure members
ARC-10737 B73-10265 08
Transparent polymeric laminates
ARC-10783 B73-10341 04
Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
Strain arrestor plate for mounting rigid insulating tiles
JSC-14182 B73-10465 06
Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08
Inexpensive lightweight mirror
MSC-14615 B74-10155 05
Fabrication and repair of graphite/epoxy laminates
M-FS-23228 B75-10164 08
Lightweight ducts fabricated from reinforced plastics and elastomers
MSC-19482 B75-10173 06
- EQUATIONS**
Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04
Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
Digital simulation program improved
M-FS-01504 B70-10705 09
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01
- A method for calculating the effects of design errors and measurement errors on pump performance
LEWIS-11503 B72-10292 07
Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03
- EQUATIONS OF MOTION**
Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
Global search algorithm for optimal control
ARC-10359 B70-10637 09
Orbit, reentry, and landing attachment for globes
LANGLEY-10626 B70-10656 03
Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 B71-10151 09
Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
Landing dynamics program for impact attenuating vehicles /LANDIT/
NPO-10840 B71-10472 09
A theoretical study of aerodynamic noise generation
M-FS-24167 B73-10209 03
Dynamic nonlinear analysis of shells of revolution (DYNASOR II)
JSC-14496 B73-10443 09
- EQUATIONS OF STATE**
Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
An equation of state for oxygen and nitrogen
JSC-14465 B73-10394 04
- EQUATORS**
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- EQUILIBRIUM**
Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Vibration testing and analysis using holography
M-FS-21050 B71-10352 03
Algorithm for Liapunov stability analysis
ARC-10498 B72-10023 09
Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03
Aerotherm chemical equilibrium (ACE) computer program
LEWIS-11722 B72-10739 09
- EQUILIBRIUM EQUATIONS**
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
- EQUILIBRIUM FLOW**
Water velocity meter
LANGLEY-10619 B70-10662 02
- EQUINOXES**
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- EQUIPMENT SPECIFICATIONS**
Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
Induction brazing manual
M-FS-14924 B71-10123 08
Automated preventive maintenance program
GSFC-11408 B71-10500 09
Prediction of ducted fan performance
ARC-10615 B72-10064 09
Low-friction ball-and-socket
NPO-11348 B72-10081 08
Selecting digital filters
M-FS-20933 B72-10156 01
New full-complement ball bearing lubrication technique
MSC-13850 B72-10174 07
Improved feedback shift register
NPO-10351 B72-10226 01
Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05
Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
ARC-10560 B72-10278 03
Design curve for liquid helium storage vessels
LEWIS-11498 B72-10286 02
Cutting thin sections of bone
ARC-10555 B72-10303 05
A simple tachometer circuit
ARC-10603 B72-10308 01
Tool carrier
M-FS-21469 B72-10319 07
Ball bearing protector
M-FS-21612 B72-10322 07
Remote weighing device
M-FS-21556 B72-10325 07
Small turbing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04
Stem clutch for motor driven valve
LRL-10032 B72-10345 07
Technique for producing wind-tunnel heat-transfer models
ARC-10658 B72-10349 08
Improved universal electrical connector
M-FS-14741 B72-10363 01
Leak decay method of helium bombardment leak testing
M-FS-24109 B72-10381 06
Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03
Two-axis leveling detector system
M-FS-21344 B72-10392 02

Rapid evaluation of reverse-osmosis membranes
 ARC-10659 872-10413 04
 Right angle mounted cold trap
 GSFC-11323 872-10436 06
 Efficient wire-grid duplexer-polarizer for CO₂ lasers
 GSFC-11403 872-10440 03
 Combination pressure regulator and safety valve: A Concept
 MSC-14088 872-10446 06
 High-speed, self-acting shaft seal (circumferential type)
 LEWIS-11274 872-10447 07
 Miniature intermittent contact switch
 ARC-10450 872-10452 01
 Latch mechanism
 M-FS-21606 872-10457 08
 Interferometer using RF switching matrix
 GSFC-11051 872-10462 01
 Ball detent mechanism
 M-FS-21735 872-10470 07
 Dry ice plug for hydraulic and pneumatic pipe flushing
 MSC-12548 872-10496 06
 No-err typing aids
 M-FS-15218 872-10498 07
 Tandem steerable running gear
 M-FS-22012 872-10499 07
 Magnetic circuitry mutual coupling probe
 M-FS-21664 872-10535 02
 Advanced high-temperature electromagnetic pump
 LEWIS-11283 872-10537 07
 Self-aligning, low-pressure sealing poppet valve
 MSC-17745 872-10538 07
 Film holder for curved vacuum platen
 MSC-14120 872-10542 07
 An improved gas extraction furnace
 MSC-14138 872-10544 04
 A compact battery powered digital thermometer
 MSC-14084 872-10545 02
 Sterile chamber operation with bio-isolator suit system
 LANGLEY-11054 872-10547 05
 Helium window for shock-tube monochromators
 NPO-11852 872-10556 03
 Restraint and locomotion aid
 ARC-10153 872-10558 06
 Vise to hold bones or other irregular objects
 ARC-10679 872-10569 07
 Laser mass spectrometer
 ARC-10687 872-10571 03
 Oscillation of laser-beam intensity as observed with beam splitters
 ARC-10694 872-10572 03
 Self-deploying boom
 GSFC-10566 872-10574 07
 Leak test system
 M-FS-21788 872-10576 06
 High pressure liquid gas pump
 MSC-14087 872-10590 06
 Spark ultrasonic transducer
 M-FS-21233 872-10594 04
 Precision machining of steel decahedrons
 M-FS-21361 872-10597 07
 Oscillating hot-wire anemometer
 NPO-11634 872-10609 02

Computer program analyzes and monitors electrical power systems (POSIMO)
 GSFC-11505 872-10610 09
 A transmitting and reflecting diffuser for ultraviolet light
 LANGLEY-10385 872-10611 03
 DC motor proportional control system for orthotic devices
 M-FS-21573 872-10617 05
 Magnetometer uses bismuth-selenide
 LEWIS-11632 872-10629 03
 Tissue holder for experimental and Demonstration Surgery
 LEWIS-11755 872-10630 05
 Use of small turbine-type flowmeters to measure flow in large pipes
 LEWIS-11851 872-10631 06
 Fill and vent quick disconnect
 M-FS-21822 872-10645 07
 A simple, efficient resistance soldering apparatus
 GSFC-10913 872-10649 08
 Automatic water inventory, collecting, and dispensing unit
 LANGLEY-11071 872-10663 06
 Sprag solenoid brake
 M-FS-21846 872-10669 06
 Improved lip seal for rotating shafts
 LEWIS-11602 872-10672 07
 A shut-off valve for flexible tubing
 M-FS-21731 872-10687 07
 New detection method for rolling element and bearing defects
 M-FS-21911 872-10689 06
 Concentric-seating poppet
 NPO-11658 872-10704 06
 Design of microstrip components by computer
 LANGLEY-11210 872-10741 01
 Automated analysis of blood pressure measurements (Korotkov sound)
 MSC-13999 872-10756 05
 Measurement of dimensions and alignment with optical instruments
 M-FS-22168 873-10061 06
 Design criteria monograph for actuators and operators
 LEWIS-12264 874-10061 06

EQUIPOTENTIALS
 Precision voltage regulator
 NPO-11502 872-10092 01

EQUIVALENT CIRCUITS
 Formulas establish audio range inductance in beryllium coils
 M-FS-14244 870-10281 02

ERBIUM
 Use of thermodynamic properties of metal-gas systems as low-pressure standards
 LANGLEY-10452 870-10223 03

EREP
 Viewfinder/tracking system for Skylab
 MSC-14407 875-10040 03

ERGOMETERS
 Multimode ergometer system
 M-FS-21044 871-10107 05
 Tilt table for ergometers and other biomedical devices
 M-FS-21010 871-10241 05

EROSION
 Surface treatment for valve seats
 NPO-10779 870-10202 08
 Variables in turbine erosion
 M-FS-18677 870-10325 03

Simple bonding technique for high-temperature ceramic coatings
 LEWIS-11085 870-10580 08
 Condensation of wet vapors in turbines
 NPO-10773 870-10613 09
 Gage for measuring coastal erosion and sedimentation
 LANGLEY-10779 870-10629 01
 High-temperature oxidation and erosion-resistant refractory coatings
 LEWIS-11221 870-10634 04
 Spray momentum measuring system
 MSC-12305 871-10137 05
 Erosion of metals by multiple impacts with water
 HQ-10591 871-10197 04
 Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 871-10310 04
 Improved electron emitter
 LEWIS-10814 871-10388 03
 A protective coating for stainless steel
 LEWIS-11267 872-10256 04
 Phosphorus in land-water systems
 AEC-10049 872-10429 05

ERROR ANALYSIS
 Method of statistical filtering
 MSC-13493 870-10427 06
 COPTRAN - A method of optimum communication systems design
 ERC-10273 870-10501 09
 A radiometric method for measuring the insertion loss of radome materials
 NPO-11423 870-10519 02
 Neutron ages computed from experimental activation data
 LEWIS-10949 870-10557 09
 Low-cost quasi-parabolic antenna
 LEWIS-11291 871-10121 01
 Design of hysteresis circuits using differential amplifiers
 ARC-10070 871-10162 01
 Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 871-10232 03
 Thermal analysis system /TAS-1/ program
 NPO-11849 871-10386 09
 Error evaluation for difference approximations to ordinary differential equations
 M-FS-21610 871-10423 09
 Errors in hybrid computers
 M-FS-21289 872-10141 02
 Thermal analog device reduces machining errors
 AEC-10080 872-10237 08
 A method for calculating the effects of design errors and measurement errors on pump performance
 LEWIS-11503 872-10292 07
 Significance arithmetic experimental package (SIGPAC)
 GSFC-11499 872-10600 09
 Computer program to generate attitude error equations for a gimbaled platform
 M-FS-21991 872-10624 09
 A linear programming manual
 HQ-10743 872-10671 09
 Validity test for linear error analysis
 JSC-14378 873-10219 09

ERROR CORRECTING DEVICES
 Error compensation for hybrid-computer solution of linear differential equations
 ERC-10262 870-10446 09

- Systems of coding and their implementation
NPO-11469 B71-10006 09
Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
An improved telemetry system
ARC-10336 B71-10201 01
Solar sensor with autocollimator
ARC-10148 B72-10192 03
No-err typing aids
M-FS-15218 B72-10498 07
Digital servo controller behaves like synchro
KSC-10769 B73-10337 02
Error-correcting codes for high-speed digital computers
M-FS-22887 B74-10147 02
- ERROR DETECTION CODES**
Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Man-machine interactive system simplifies computer-aided circuit design
LANGLEY-10711 B70-10660 09
Improved convolutional coding
MSC-13625 B70-10698 09
An improved telemetry system
ARC-10336 B71-10201 01
Efficient digital comparison technique for logic circuits
M-FS-21080 B71-10218 02
Self-synchronizing, bi-orthogonal coded PCM telemetry system
GSFC-11237 B71-10324 02
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
Principles of error detection and error correction codes
NPO-11487 B71-10408 02
Techniques for improving reliability of computers
M-FS-21326 B72-10109 02
Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
Minimal hardware, binary sequence pseudonoise generator and detector
NPO-11406 B73-10292 01
Low-cost coding techniques for digital fault diagnosis
NPO-11701 B73-10344 09
Improved general-purpose namelist processor
LANGLEY-11834 B75-10263 09
- ERROR FUNCTIONS**
New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02
Errors in hybrid computers
M-FS-21289 B72-10141 02
- ERROR SIGNALS**
Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Communications link for SDS 900 series computers
NPO-11161 B70-10163 02
Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
Liquid level sensor
M-FS-16648 B70-10219 01
Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
- Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Techniques for improving reliability of computers
M-FS-21326 B72-10109 02
Illumination control system
ARC-10527 B72-10167 02
- ERRORS**
Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09
Active parallel redundancy for electronic integrator-type control circuits
NUC-10231 B71-10040 01
Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08
A method for calculating the effects of design errors and measurement errors on pump performance
LEWIS-11503 B72-10292 07
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09
Two autowire versions for CDC-3200 and IBM-360
GSFC-11526 B72-10608 09
Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02
- ERYTHROCYTES**
Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
- ESCAPE SYSTEMS**
Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
Cylindrically shaped rope ladder
M-FS-16319 B72-10688 07
Emergency-escape device
M-FS-22720 B73-10369 07
Emergency descent device
M-FS-23074 B74-10226 05
- ESTERS**
Evaluation of two designs for cryogenic insulation
M-FS-14740 B70-10415 03
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
New type of trifunctional alcohol
NPO-10714 B72-10553 04
- ESTIMATES**
Reliability Analysis Model
M-FS-14513 B70-10614 09
- Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03
- ESTIMATING**
Method of statistical filtering
MSC-13493 B70-10427 06
Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06
Elements of orbit-determination theory - Textbook
NPO-11466 B71-10425 03
Atmospheric density variations related to internal gravity waves
M-FS-21637 B72-10143 03
- ESTIMATORS**
Telemetry receiver
NPO-10746 B70-10008 02
- ETCHANTS**
Improved photoetching fabrication method
LEWIS-11268 B72-10745 08
- ETCHING**
Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
Technique for improving hydrodynamic gyro bearings
M-FS-20764 B70-10301 06
Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04
Economical printed circuit front panel for computer use
KSC-10573 B70-10560 01
Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
Man-machine communication - A transparent switchboard for computers
MSC-13746 B71-10263 02
Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
Microminiature gas chromatographic column
ARC-10594 B72-10306 04
Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 B72-10440 03
Sputter etching of hemispherical bearings
HQ-10712 B72-10534 08
Improved photoetching fabrication method
LEWIS-11268 B72-10745 08
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07
A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
LANGLEY-11536 B74-10234 01

- Sputtered gold mask for deep chemical etching of silicon
 LANGLEY-11661 B75-10089 08
- Stripe-line coil for magnetic-field generation in bubble memory devices
 LANGLEY-11705 B75-10195 01
- Low-loss stripe-line coil for magnetic bubble memory
 LANGLEY-11707 B75-10196 01
- ETHANE**
 An absorption spectrum amplifier for determining gas composition
 HQ-10752 B72-10524 03
- ETHERS**
 Liquid cryogenic lubricant
 LEWIS-11075 B70-10347 07
- Preparation of highly fluorinated diols containing ether linkages.
 NPO-10768 B70-10353 04
- Collodion technique of mirror cleaning
 LANGLEY-10675 B70-10463 04
- Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04
- Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04
- Solvation agent for disulfide precipitates from inhibited glycol-water solutions
 MSC-13695 B71-10331 04
- ETHYL ALCOHOL**
 Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04
- Improved reflective coating for integrating spheres
 GSFC-10855 B71-10110 03
- Stabilization of lactate dehydrogenase
 ARC-10415 B72-10062 05
- Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
 LANGLEY-10940 B72-10115 04
- ETHYLENE**
 Cold-blade stripper for polyimide and TFE insulation on FCC
 M-FS-20115 B71-10460 08
- Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 B72-10177 02
- Liquid ethylene-propylene copolymers
 NPO-13555 B75-10207 04
- ETHYLENE COMPOUNDS**
 Colorimetric detection of ethylene glycol vapor
 MSC-13222 B70-10031 03
- Improved protection for silicon solar cells
 LEWIS-11065 B70-10706 08
- Moisture-resistant coatings for optical components
 ARC-10749 B73-10507 04
- ETHYLENE OXIDE**
 Functionally terminated liquid nitroso fluorocarbon terpolymers
 M-FS-21539 B72-10493 04
- ETHYLENEDIAMINETETRAACETIC ACIDS**
 Oxygen sensitive paper
 M-FS-22354 B73-10103 04
- Calibration of dissolved oxygen standard for analysis with methylene blue
 M-FS-22353 B73-10147 04
- EULER BUCKLING**
 Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
 M-FS-20556 B70-10598 06
- Structural behavior of tapered inflated fabric cylinders under various loading conditions
 MSC-15317 B71-10327 06
- Axisymmetric and cylindrical isostable structures - A concept
 NPO-12049 B71-10446 06
- EULER-LAGRANGE EQUATION**
 Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
 M-FS-20556 B70-10598 06
- Separation of two bodies in space
 NPO-10663 B70-10625 09
- EULER-LAMBERT EQUATION**
 Multibody Interplanetary Swingby Trajectories /MIST-1/
 M-FS-15081 B70-10603 09
- EUTECTIC ALLOYS**
 High temperature rare earth solid lubricants
 LEWIS-10983 B70-10175 04
- Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10256 B70-10444 04
- Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10277 B70-10445 03
- High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
- Metallic composites as high-temperature fasteners
 M-FS-22438 B73-10081 04
- Binary alloys for refractory-metal brazing
 LEWIS-12184 B74-10125 08
- Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
 LEWIS-12562 B75-10246 04
- EUTECTICS**
 The columbium-hydrogen system and hydrogen embrittlement of columbium
 M-FS-18659 B70-10146 04
- Copper/nickel eutectic brazing of titanium
 ARC-10337 B71-10525 08
- Boron aluminum composite structures
 M-FS-21571 B72-10386 04
- Eutectic bonding of sapphire to sapphire
 GSFC-11577 B73-10284 08
- Contact-eutectic-lens fabrication technique
 M-FS-23275 B75-10308 04
- EVACUATING**
 Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
 ARC-10567 B72-10419 04
- EVACUATING (TRANSPORTATION)**
 Emergency descent device
 M-FS-23074 B74-10226 05
- EVACUATING (VACUUM)**
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 B71-10079 04
- Helium leak measurements using CO₂ as a carrier
 M-FS-21742 B72-10354 03
- New compression molding process of thermosetting plastic compounds
 LANGLEY-10782 B72-10356 08
- EVALUATION**
 Diagnostic capability added to digital events evaluator
 KSC-10526 B71-10001 02
- Performance evaluation system for inertial navigation equipment
 MSC-13542 B71-10087 02
- Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
- Numerical integration of second order differential equations
 M-FS-20536 B71-10186 09
- Standardized Pearson type 3 density function area tables
 M-FS-20541 B71-10205 02
- Interpretation of aluminum-alloy weld radiography
 M-FS-20943 B71-10206 08
- Cast segment evaluation
 M-FS-21354 B71-10363 08
- Computer program for discounted cash flow/rate of return evaluations
 M-FS-19040 B71-10377 09
- Program audit. A management tool
 KSC-10557 B71-10380 01
- Manpower management information system /MIS/
 M-FS-21477 B71-10431 09
- Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01
- Design and evaluation of convectively cooled nozzles
 LEWIS-10894 B71-10508 09
- Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 B71-10509 09
- Space Ultrareliable Modular Computer (SUMC) instruction simulator
 M-FS-22697 B74-10145 09
- Remote sunfall monitor: A concept
 M-FS-22943 B74-10149 03
- Fortran Automatic Code Evaluation System (FACES)
 M-FS-22910 B74-10190 09
- Apparatus for monitoring linear explosive performance
 LANGLEY-10800 B74-10201 04
- System for measuring transients in fluid flow
 ARC-10852 B74-10217 03
- Evaluation of test procedures for hydrogen environment embrittlement
 ARC-10919 B74-10222 04
- Horn antenna with v-shaped corrugated surface
 LANGLEY-11112 B74-10260 01
- Automated maintenance for complex hybrid systems
 NPO-13143 B74-10279 09
- Design criteria monograph on turbopump systems
 LEWIS-12499 B75-10135 06
- Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03
- Bubble-domain circuit wafer evaluation coil set
 LANGLEY-11728 B75-10197 01
- A new high temperature noble metal thermocouple pairing
 LEWIS-12545 B75-10245 03

- Optical design computer program: LENS II
 GSFC-11951 B75-10250 03
 Industrial laser welding: An evaluation
 M-FS-23237 B75-10267 08
 Single crystals of metal solid solutions: A study
 M-FS-23268 B75-10268 03
 Influence of heat treatment on mechanical properties of 300M steel
 MSC-14792 B75-10271 04
 Amplifying ribbon extensometer
 LANGLEY-11825 B75-10300 06
 Quality control of microelectronic wire bonds
 M-FS-23327 B75-10312 01
- EVAPORATION**
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 B71-10096 05
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08
 Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03
 Multichamber controllable heat pipe
 ARC-10199 B71-10526 03
 Beryllium thin films for resistor applications
 ARC-10485 B72-10021 01
 Restartable heat pipe
 ARC-10198 B72-10188 03
 Induction heating simplifies metal evaporation for ion plating
 LEWIS-12595 B75-10288 03
- EVAPORATION RATE**
 Diffusion pump modification promotes self-cleansing and high efficiency
 LEWIS-12323 B75-10065 06
- EVAPORATIVE COOLING**
 A cryopump for cooling objects at a distance
 LRL-10031 B72-10314 03
 Freon 21 bearing lubrication and coolant system
 HQ-10302 B72-10651 06
 A two-degree Kelvin refrigerator
 NPO-13459 B75-10181 03
- EVAPORATORS**
 Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 B70-10106 03
 Vapor feeding of liquid metal cathodes
 HQ-10213 B70-10168 03
 Performance map of a heat pipe charged with ammonia
 NPO-11454 B70-10726 03
 Literature review and experimental investigation of heat pipes
 M-FS-21074 B71-10353 03
 Closed-cycle power supply for fluidic control systems
 ARC-10480 B72-10163 06
 Heat pipe with hot gas reservoir
 ARC-10847 B74-10216 03
- EXCITATION**
 Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
 HQ-10389 B70-10108 03
 Portable vibration exciter
 KSC-10069 B70-10339 07
 Peak structural response to nonstationary random excitations
 NPO-11617 B71-10188 06
- Analytical procedure for estimating reliability of randomly excited structures
 NPO-11618 B71-10189 06
 Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
 M-FS-21160 B71-10208 04
 On-line analysis of random vibrations
 ARC-10154 B71-10284 09
 Vibration testing and analysis using holography
 M-FS-21050 B71-10352 03
 Vibrational transfer functions for base excited systems
 M-FS-21432 B71-10441 09
 Pulse excitation of bolometer bridges
 ARC-10292 B72-10054 01
 Polymeric coatings using electronic excitation
 HQ-10698 B72-10257 04
 Alternating current losses in superconducting coils
 M-FS-21129 B72-10360 03
 Enhanced Lamb dip for absolute laser frequency stabilization
 HQ-10695 B72-10481 02
- EXHALATION**
 Metabolic breath analyzer
 M-FS-21415 B71-10466 05
 Aircrew oxygen system
 ARC-10247 B72-10195 05
- EXHAUST DIFFUSERS**
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
 Airflow distribution control for improved turbine engine performance
 LEWIS-11593 B72-10178 07
- EXHAUST GASES**
 Hydrogen-oxygen powered internal combustion engine
 LEWIS-90264 B70-10610 07
 Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 B71-10212 08
 Antipollution system to remove nitrogen dioxide gas
 LEWIS-11297 B71-10393 04
 Fluidic systems may improve combustion in automotive engines
 ARC-10582 B72-10250 06
 Safe transport of diborane in a dual refrigerant system: A concept
 ARC-10559 B72-10277 03
 Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
 LEWIS-11512 B72-10434 07
 Squib-operated disconnect
 NPO-11330 B72-10713 06
 Air-atomizing splash-cone fuel nozzle reduces pollutant emissions from turbojet engines
 LEWIS-11918 B73-10200 06
 Formaldehyde monitor for automobile exhausts
 LANGLEY-11352 B73-10228 04
 Catalytic reactor with disposable cartridge
 ARC-10747 B73-10376 04
 Minimization of jet and core noise by rotation of flow
 ARC-10712 B75-10131 06
 Improved air atomizing splash-groove fuel injector reduces pollutant emissions from turbojet engines
 LEWIS-12417 B75-10190 06
 Handbook for estimating toxic fuel hazards
 M-FS-21114 B75-10198 04
- Laser-excited fluorescence for measuring atmospheric pollution
 NPO-13231 B75-10275 02
- EXHAUST NOZZLES**
 Novel valve for reciprocating compressors - Concept
 MSC-15060 B70-10160 07
 Four-way, full-throttling valve concept
 MSC-13437 B70-10165 07
 Thrust vector control for V/STOL aircraft
 ARC-10788 B74-10049 06
- EXHAUST SYSTEMS**
 Exhaust cloud rise and diffusion in the atmosphere
 M-FS-21119 B71-10111 03
 Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
 LEWIS-11638 B72-10137 04
 Fluidic systems may improve combustion in automotive engines
 ARC-10582 B72-10250 06
 Remote control flare stack igniter for combustible gases
 M-FS-21675 B72-10352 07
 Experimental study of flow distribution with circumferential manifolds
 LEWIS-11649 B72-10738 06
 Improved method for design of expansion-chamber mufflers with application to operational helicopter
 LANGLEY-11548 B73-10471 03
 Control vane for engine exhaust flow
 LANGLEY-11570 B74-10138 06
 Airfoil disperses smokestack effluents upward
 LANGLEY-11669 B75-10074 06
 Computer program for the attenuation of high bypass turbofan engine noise
 LEWIS-12179 B75-10242 09
- EXOTHERMIC REACTIONS**
 Synthesis of a new class of highly fluorinated aliphatic diisocyanates
 M-FS-20883 B71-10300 04
 Exothermic brazing units
 M-FS-21435 B71-10467 08
 Comparison of catalyst activity
 ARC-10493 B72-10201 04
 Nonflammable and abrasion resistant coating process for glass fibers
 MSC-14024 B72-10445 08
- EXPANDABLE STRUCTURES**
 Variable-area nozzle automatically controls fluid flow
 LEWIS-11217 B71-10222 07
 Miniature high pressure regulator
 ARC-10428 B72-10211 07
- EXPANSION**
 A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01
 High expansion coefficient glasses can be sealed to common metals
 LEWIS-10698 B70-10429 08
 High temperature glass coatings for superalloys and refractory metals
 LEWIS-10700 B70-10430 08
 Rugged, low-conductance, heat-flow probe
 MSC-13443 B70-10622 03
 Concentric tubes cold-bonded by drawing and internal expansion
 ARG-90033 B71-10050 08
 Inexpensive, large-diameter, radar tracking and calibration spheres
 XLA-11154 B71-10190 01

- Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
- Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07
- EXPELLANTS**
Dry ice plug for hydraulic and pneumatic pipe flushing
MSC-12548 B72-10496 06
- EXPERIMENTAL DESIGN**
Safe suspension of specimens or clusters during dynamic testing - A concept
M-FS-15110 B70-10559 07
- EXPERIMENTATION**
Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09
- Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01
- Composite casting demonstration
M-FS-21668 B72-10266 04
- Real-time pair-feeding of animals
ARC-10302 B72-10298 05
- EXPIRATION**
Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
- EXPIRED AIR**
Carbon dioxide concentrator
ARC-10245 B72-10194 05
- EXPLODING WIRES**
A high-speed spectrograph shutter
HQ-10635 B73-10368 01
- EXPLORATION**
Articulated elastic-loop roving vehicles
M-FS-22691 B73-10326 06
- EXPLOSIONS**
Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
- Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
- Improved method of using paraformaldehyde as a disinfectant
MSC-15887 B71-10096 05
- Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04
- EXPLOSIVE DEVICES**
Umbilical disconnect actuator
NPO-11202 B70-10170 07
- Squib-actuated disconnect device
NPO-11544 B72-10097 06
- Explosive cord
M-FS-21928 B72-10293 08
- Fluid operated quick release mechanism
M-FS-20205 B72-10640 07
- Laser-actuated mechanical device
NPO-13105 B74-10166 03
- Laser system to detonate explosive devices
NPO-11743 B74-10194 03
- Powered fire nozzle for fast penetration of structures: A concept
MSC-19528 B75-10111 06
- EXPLOSIVE WELDING**
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
- New explosive seam welding concepts
LANGLEY-11211 B73-10180 04
- Explosive welding technique for joining aluminum and steel tubes
MSC-14721 B74-10272 08
- EXPLOSIVES**
Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 B70-10335 01
- Reducing streak film data via electronic cross correlator
M-FS-18804 B70-10365 01
- Lightweight S-band helix antenna
KSC-10392 B70-10538 02
- Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
- Velocity accelerator for particles
NPO-11349 B72-10082 03
- Polymeric binder for explosives
AEC-10062 B72-10366 04
- A four-panel enclosure protects from explosion
M-FS-21847 B72-10613 06
- Apparatus for monitoring linear explosive performance
LANGLEY-10800 B74-10201 04
- Negative ion spectrometry for detecting nitrated explosives
NPO-13082 B74-10276 02
- Risk management technique for liquefied natural gas facilities
KSC-11005 B75-10193 04
- Start/stop switches for testing detonation velocity of explosives
KSC-10793 B75-10255 01
- EXPONENTIAL FUNCTIONS**
Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01
- Indefinite integrals of products of some exponential and trigonometric functions
LEWIS-11493 B72-10225 09
- EXPOSURE**
Multiple shutters for a stereoscopic camera
MSC-13507 B71-10065 03
- Estimating carbon monoxide exposure
MSC-17211 B71-10319 04
- Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
- Shutter design for stereoscopic camera
MSC-13613 B71-10506 03
- Hybrid holographic system
M-FS-20074 B72-10260 03
- Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03
- EXPULSION**
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
- CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09
- EXPULSION BLADDERS**
PTFE films with improved flexibility
NPO-12028 B72-10551 04
- Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06
- EXTENSIONS**
Computer design of extension springs
M-FS-24073 B71-10473 09
- EXTENSOMETERS**
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
- Bileaf mechanical strain gage
ARC-10303 B72-10197 07
- Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06
- EXTERNALLY BLOWN FLAPS**
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
- EXTINGUISHING**
Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03
- Method for evaluating effectiveness of dry fire-extinguishing chemicals
ARC-10869 B75-10027 04
- EXTRACTION**
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
- Tool for installing or extracting small bulbs in limited-access spaces
LANGLEY-11543 B73-10433 07
- Liquid sample processor
NPO-13136 B74-10278 05
- Straight-line IC removal tool
NPO-13157 B74-10281 01
- Improved extraction technique for biological fluids
NPO-13084 B75-10045 05
- EXTRAPOLATION**
Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09
- High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
- Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05
- An empirical relationship for the penetration of 1 to 3 MeV electrons
LEWIS-11495 B72-10144 04
- EXTRATERRESTRIAL LIFE**
Unified life detection system: A concept
ARC-10769 B73-10377 05
- EXTRATERRESTRIAL RADIATION**
Improved silicon solar cells
LEWIS-10964 B70-10029 01
- Cosmic dust or other similar outer-space particles location detector
GSFC-11291 B73-10282 02
- EXTREMELY HIGH FREQUENCIES**
High-efficiency K-band tracking antenna feed
MSC-14717 B75-10107 02
- EXTREMELY LOW RADIO FREQUENCIES**
Pre-emphasis determination for an S-band constant bandwidth FM/FM station
M-FS-22135 B73-10170 02
- EXTRUDING**
Progress in research on chlorate candle technology
MSC-13409 B70-10258 04
- High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08
- Producing graphite with desired properties
NUC-11001 B71-10042 04
- Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
- EYE (ANATOMY)**
Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
- Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04

- Scanning technique for tracking small eye-movements
 ARC-10488 872-10220 05
 Tissue holder for experimental and Demonstration Surgery
 LEWIS-11755 872-10630 05
- EYE EXAMINATIONS**
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 870-10568 05
- EYE MOVEMENTS**
 Eye point-of-regard system
 ARC-10360 871-10476 05
 Projections of scan patterns on human retina
 ARC-10181 872-10193 05
 Scanning technique for tracking small eye-movements
 ARC-10488 872-10220 05
 Eye-controlled "teletypewriter"
 LANGLEY-11564 873-10514 02

F

FABRICATION

- Use of acrylic sheet molds for elastomeric products
 MSC-15636 870-10019 08
 Split radius-form blocks for tube benders
 MSC-15773 870-10038 08
 Transistor bonding pad configuration for uniform injection and low inductance
 GSFC-10790 870-10181 01
 Fiberglass honeycomb elements formed quickly and cheaply
 LANGLEY-10125 870-10342 08
 Fabricating subscale components for application to full-scale parts
 M-FS-20805 870-10390 07
 Economical printed circuit front panel for computer use
 KSC-10573 870-10560 01
 Silicon solar cells improved by lithium doping
 NPO-11390 870-10585 04
 The low-cost cryostat
 NUC-11034 870-10592 03
 Bonding of strain gages to fiber reinforced composite plastic materials
 LEWIS-11151 870-10630 01
 Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
 LANGLEY-10358 871-10035 01
 Improved wax mold technique forms complex passages in solid structures
 XLA-07829 871-10063 05
 Low-cost quasi-parabolic antenna
 LEWIS-11291 871-10121 01
 PUZZLE - A program for computer-aided design of printed circuit artwork
 LRL-10050 871-10122 09
 Wall attachment, fluoric crossover "AND" gate
 XLA-07391 871-10178 07
 Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 871-10212 08
 Unique intermetallic compounds prepared by shock wave synthesis
 M-FS-20861 871-10216 04
 Promising born/graphite/resin composites
 M-FS-21126 871-10217 04

- Strain gage performance above 1033 K
 M-FS-18831 871-10225 04
 Computer-aided design of large-scale integrated circuits - A concept
 M-FS-20600 871-10238 09
 The deterioration of intermediate moisture foods
 MSC-13827 871-10332 05
 Pictorial display of materials and processes aids in fabricating complex assemblies
 M-FS-24006 871-10341 01
 NASA-tricot - A lightweight radar reflective, knitted fabric
 LANGLEY-10776 871-10342 04
 Nonvolatile read/write memory element - A concept
 GSFC-10993 871-10346 01
 Modular construction provides large volume storage facility in minimum space
 M-FS-13568 871-10354 08
 Cast segment evaluation
 M-FS-21354 871-10363 08
 Fabrication techniques for thorium-dispersed /TD/ nickel
 LEWIS-11240 871-10369 08
 Analysis of multilayered fiber composites
 LEWIS-11347 871-10372 09
 High-strength large-diameter carbon-base fibers
 LEWIS-11167 871-10403 04
 Application of calibration masks to TV vidicon tube
 KSC-10589 871-10404 02
 Waveshaping electronic circuit
 M-FS-14916 871-10429 01
 Cartesian-coordinate dimensioning for plumbing systems
 M-FS-18867 871-10435 08
 Handling fixture for soldering round wires to FCC
 M-FS-20118 871-10464 08
 Simple method for forming thin-wall pressure vessels
 ARC-10511 872-10025 08
 Use of thin plastic films at cryogenic temperatures
 LEWIS-11047 872-10038 04
 Nondestructive-test standards for evaluation of fiber-reinforced composites
 M-FS-21288 872-10157 04
 Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 872-10177 02
 Packaging concept for LSI beam lead integrated circuits
 M-FS-21374 872-10329 07
 Nondestructive testing for braze voids in thin panels by use of special coatings
 LANGLEY-10486 872-10374 08
 Guidelines for fabrication of hybrid microcircuits
 M-FS-21964 872-10393 01
 Improved silver-zinc battery-terminal seals
 LEWIS-11615 872-10581 06
 Fabrication of cooled, graphite-lined structures
 LEWIS-11741 872-10593 08
 Precision machining of steel decahedrons
 M-FS-21361 872-10597 07
 Large boron-epoxy filament-wound pressure vessels
 NPO-11900 873-10038 08

- Densification of powder metallurgy billets by a roll consolidation technique
 LEWIS-11395 873-10040 08
 Fabrication of magnetic bubble memory overlay
 M-FS-22377 873-10096 01
 Beam lead forming tool
 M-FS-22133 873-10098 07
 Fabrication techniques for polybenzimidazole composites
 ARC-10724 873-10269 04
 Silicon-fiber blanket solar-cell array concept
 M-FS-22458 873-10374 01
 Materials data handbook on Inconel Alloy 718
 M-FS-22793 873-10396 04
 Materials data handbooks on stainless steels
 M-FS-22797 873-10397 04
 Adhesive coating eliminated in new honeycomb-core fabrication process
 LANGLEY-11134 873-10439 08
 Process for the production of star-tracking reticles
 GSFC-11188 873-10488 03
 Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
 GSFC-11860 873-10516 03
 Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
 LEWIS-11490 874-10124 04
 Fabrication of thick structures by sputtering
 LEWIS-12331 874-10126 08
 Laminating cored, stressed-face, sandwich structures
 XLA-11028 874-10233 06
 Depositing spacing layers on magnetic film with liquid phase epitaxy
 LANGLEY-11528 874-10262 01
 Controlled intermittent interfacial bond concept for composite materials
 LANGLEY-11628 874-10264 04
 Improved fabrication of electrolytic capacitors
 M-FS-23133 874-10294 01
 Sputtered gold mask for deep chemical etching of silicon
 LANGLEY-11661 875-10089 08
 High-performance Schottky diodes endure high temperatures
 M-FS-23184 875-10101 01
 Integrated-circuit balanced parametric amplifier
 M-FS-23193 875-10102 01
 Tailor making high performance graphite fiber reinforced PMR polyimides
 LEWIS-12416 875-10137 04
 Fabrication of porous plugs for control of liquid helium
 M-FS-23218 875-10163 04
 Fabrication and repair of graphite/epoxy laminates
 M-FS-23228 875-10164 08
 Lightweight ducts fabricated from reinforced plastics and elastomers
 MSC-19482 875-10173 06
 Improved multiple-target sputtering equipment
 NPO-13345 875-10178 04
 Stripe-line coil for magnetic-field generation in bubble memory devices
 LANGLEY-11705 875-10195 01

- Low-loss stripe-line coil for magnetic bubble memory
 LANGLEY-11707 B75-10196 01
- Start/stop switches for testing detonation velocity of explosives
 KSC-10793 B75-10255 01
- Diamine curing agents for polyurethanes
 LANGLEY-11829 B75-10261 08
- Increasing terminal strip efficiency at cryogenic temperatures
 M-FS-23234 B75-10266 03
- Low-Cost thin-layer silicon solar cells
 GSFC-12023 B75-10293 04
- Formation of internally-confined semiconductor lasers
 LANGLEY-11770 B75-10299 08
- Low-cost hot-air solar collector
 M-FS-23272 B75-10301 08
- Lightweight orthotic braces
 LANGLEY-11894 B75-10303 05
- Microcircuit testing and fabrication, using scanning electron microscopes
 M-FS-23159 B75-10304 01
- Read-only optical storage medium
 M-FS-23169 B75-10305 03
- Contact-eutectic-lens fabrication technique
 M-FS-23275 B75-10308 04
- Foam-machining tool with eddy-current transducer
 M-FS-23298 B75-10309 08
- FABRICS**
- Strain gage load measuring device - A concept
 MSC-13385 B70-10326 01
- Improved reinforcement for openings in difficult fabrics
 MSC-13554 B70-10489 08
- Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
 MSC-13571 B70-10540 04
- Low-temperature radiation-resistant material for ball-bearing retainers
 NUC-10058 B70-10576 04
- Pressurized suits can be fabricated with adjustable dimensions
 MSC-12398 B71-10092 05
- Locating tube blockage that X-ray cannot detect
 NUC-10386 B71-10129 06
- Limited life item management
 M-FS-24020 B71-10196 06
- Evaluation of omniweave reinforcement for composite fabrication
 M-FS-20946 B71-10245 04
- Improved insulating materials effective at extremely high temperatures
 NPO-12067 B71-10289 04
- Structural behavior of tapered inflated fabric cylinders under various loading conditions
 MSC-15317 B71-10327 06
- NASA-tricot - A lightweight radar reflective, knitted fabric
 LANGLEY-10776 B71-10342 04
- Reusable anaerobic system for microbiological studies - A concept
 MSC-13920 B71-10495 05
- Convuluted fabric for full-pressure gloves
 ARC-10529 B72-10215 04
- Nonflammable and abrasion resistant coating process for glass fibers
 MSC-14024 B72-10445 08
- A versatile flammability test chamber
 KSC-10126 B73-10111 06
- Amplifying ribbon extensometer
 LANGLEY-11825 B75-10300 06
- Flammability study of materials in oxygen environments
 M-FS-23306 B75-10310 04
- FABRY-PEROT INTERFEROMETERS**
- Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
- Liquid-helium-cooled Michelson interferometer
 ARC-10554 B72-10217 03
- FABRY-PEROT SPECTROMETERS**
- Heat-rejection windows for telescopes
 M-FS-20634 B70-10386 04
- FACSIMILE COMMUNICATION**
- Automatic focus control for facsimile camera
 LANGLEY-11213 B73-10361 02
- FACTORIALS**
- Optimizing designs of two-level factorial experiments given partial prior information (NAMER)
 LEWIS-11708 B72-10726 09
- FAIL-SAFE SYSTEMS**
- Magnetic gear backup
 MSC-13408 B70-10087 07
- Post-operative cranial pressure monitoring system
 ERC-10336 B70-10436 05
- Fail-safe numerical control
 M-FS-12613 B70-10522 02
- Redundant electronic circuit provides fail-safe control
 NUC-10389 B70-10565 01
- Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
 LEWIS-11152 B71-10173 07
- Fail-safe fire detection system
 LEWIS-12238 B74-10078 02
- FAILURE**
- System availability management technique for reliability and maintainability analysis
 KSC-10315 B70-10063 09
- A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01
- Redundant electronic circuit provides fail-safe control
 NUC-10389 B70-10565 01
- Microprogram scheme for automatic recovery from computer error
 MSC-13387 B70-10642 09
- Study of second breakdown in power transistors using infrared techniques
 M-FS-20748 B71-10021 01
- Chatter-free check valve - A concept
 MSC-13262 B71-10067 07
- Hybrid redundancy system for improving reliability - A concept
 NPO-11546 B71-10132 01
- Predicting vibrational failure of flexible ducting
 M-FS-16750 B71-10150 06
- Predicting service life margins
 M-FS-24015 B71-10194 06
- Limited life item management
 M-FS-24020 B71-10196 06
- Erosion of metals by multiple impacts with water
 HQ-10591 B71-10197 04
- Interpretation of aluminum-alloy weld radiography
 M-FS-20943 B71-10206 08
- Axisymmetric and cylindrical isostable structures - A concept
 NPO-12049 B71-10446 06
- Software control for large scale on-board checkout: A concept
 MSC-13977 B72-10015 09
- Event-sequence detector
 NPO-11703 B73-10278 01
- DC-to-AC inverter ratio failure detector
 NPO-13160 B74-10282 01
- FAILURE ANALYSIS**
- Prediction of faults in components of machinery in motion
 GSFC-10801 B70-10116 06
- Prediction of gas leakage of environmental control systems
 HQ-10270 B70-10201 05
- Ground computer test trap
 KSC-10574 B70-10561 09
- Diagnostic capability added to digital events evaluator
 KSC-10526 B71-10001 02
- Peak structural response to nonstationary random excitations
 NPO-11617 B71-10188 06
- Predicting service life margins
 M-FS-24015 B71-10194 06
- Teardown analysis for detecting shelf-life degradation
 M-FS-24017 B71-10195 04
- Automatic cross-sectioning and monitoring system locates defects in electronic devices
 GSFC-11221 B71-10221 01
- Portable circuit-interruption indicator
 KSC-10546 B71-10246 02
- Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06
- On-line analysis of random vibrations
 ARC-10154 B71-10284 09
- Table for estimating parameters of Weibull distribution
 M-FS-18817 B71-10436 03
- Adhesion theory review
 AEC-10083 B72-10231 04
- Failure in glass
 AEC-10088 B72-10364 04
- Prediction of flow-induced failures of braided flexible hoses and bellows
 M-FS-19004 B72-10407 06
- Systems effectiveness evaluation program
 HQ-10306 B72-10458 09
- Analytical failure determination of flow-induced fatigue in bellows
 M-FS-18178 B72-10488 06
- A system for early warning of bearing failure
 M-FS-21877 B72-10494 06
- Redundant data management system
 M-FS-21831 B72-10589 09
- New detection method for rolling element and bearing defects
 M-FS-21911 B72-10689 06
- An improved method for obtaining a normalized junction temperature for semiconductors: A concept
 JSC-14136 B73-10196 01
- A new algorithm for finding survival coefficients employed in reliability equations
 M-FS-22295 B73-10256 09

- Creep-fatigue analysis by Strainrange Partitioning
LEWIS-12072 B73-10314 04
- FAILURE MODES**
An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01
Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
M-FS-20556 B70-10598 06
Reliability Analysis Model
M-FS-14513 B70-10614 09
Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
High-reliability release mechanism
LEWIS-11233 B71-10080 07
New understanding of fiber composite materials
NPO-11605 B71-10161 04
Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06
Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
Voter comparator switch provides fail safe data communications system - A concept
MSC-13932 B71-10504 02
Reliability analysis based on operational success criteria
ARC-10490 B72-10214 09
New detection method for rolling element and bearing defects
M-FS-21911 B72-10689 06
- FALKNER-SKAN EQUATION**
Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
- FALLOUT**
Microbial burden prediction model program
NPO-11709 B71-10401 09
Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 B71-10475 05
- FAR FIELDS**
The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03
- FAR INFRARED RADIATION**
Superconducting quantum-interference devices
M-FS-23163 B75-10097 03
- FAR ULTRAVIOLET RADIATION**
High-energy lasers by using distributed reflection: A concept
NPO-13346 B75-10118 03
- FARADAY EFFECT**
Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 B70-10447 05
Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
- Low-noise microwave polarimeter
NPO-11512 B73-10134 02
- FAST NEUTRONS**
A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
Fast-neutron developments
M-FS-22279 B73-10116 03
- FASTENERS**
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Tool carrier
M-FS-21469 B72-10319 07
Perload indicating turnbuckle
M-FS-21488 B72-10355 07
Quick-donning backpack harness
LANGLEY-10102 B72-10641 05
Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04
Modular support blocks for fluid lines
MSC-19335 B74-10023 07
New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07
- FATIGUE (BIOLOGY)**
High mobility work station restraint support
MSC-12419 B71-10301 07
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
Hand tremor and activity sensor
ARC-10849 B75-10057 05
- FATIGUE (MATERIALS)**
Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05
Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04
Effect of size on cracking of materials
NPO-11602 B71-10158 04
Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06
Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06
Flat-conductor cable has rotary and linear flexibility
M-FS-21096 B71-10242 01
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
Failure in glass
AEC-10088 B72-10364 04
- Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06
Analytical failure determination of flow-induced fatigue in bellows
M-FS-18178 B72-10488 06
The weld-brazing metal joining process
LANGLEY-11072 B72-10683 08
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
A self-supporting strain transducer
LANGLEY-11263 B73-10201 06
Creep-fatigue analysis by Strainrange Partitioning
LEWIS-12072 B73-10314 04
Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06
- FATIGUE LIFE**
Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08
Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
M-FS-18753 B70-10364 04
Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
LEWIS-10856 B70-10468 07
TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 B71-10173 07
Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04
Plating by glass-bead peening
GSFC-11163 B71-10256 08
Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03
Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04
Carbide factor predicts rolling-element bearing fatigue life
LEWIS-11940 B73-10008 07
Silicon nitride used as a rolling-element bearing material
LEWIS-12447 B75-10134 06
Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
LEWIS-12502 B75-10138 03
- FATIGUE TESTING MACHINES**
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
Durability tester for FCC connectors
M-FS-20128 B71-10418 08
- FATIGUE TESTS**
Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04

- Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 870-10199 04
- Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 870-10241 08
- Peak structural response to nonstationary random excitations
NPO-11617 871-10188 06
- Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 872-10339 04
- Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 872-10382 04
- A tool for cutting ultra thin slits in metals
KSC-10770 872-10433 07
- Fatigue testing device
LANGLEY-10426 873-10047 07
- FATS**
- Metabolic balance analysis program
M-FS-21237 871-10384 09
- FEED SYSTEMS**
- Vapor feeding of liquid metal cathodes
HQ-10213 870-10168 03
- Improved modified turnstile antenna
MSC-12209 870-10482 01
- Filler-wire positioner for electron beam welding
MSC-15637 870-10604 08
- Digital computer program for analyzing chugging instabilities
LEWIS-11294 871-10215 09
- Advanced high-temperature electromagnetic pump
LEWIS-11283 872-10537 07
- Hydrophobic liquid/gas separator for heat pipes
ARC-10656 872-10549 03
- FEEDBACK**
- Slow-speed drives for miniature devices
NPO-10700 870-10007 02
- A new solid-state logarithmic radiometer
ARC-10287 870-10633 02
- Small, efficient power supply for xenon lamps
MSC-13637 870-10684 01
- Digital simulation error curves for a spring-mass-damper system
M-FS-20770 871-10003 09
- Kaleidoscopic light feedback for television systems
MSC-12386 871-10068 03
- A 20 kHz power oscillator
LEWIS-11319 871-10174 01
- Multichannel intercom with simultaneous send/receive capability
M-FS-18808 871-10228 02
- Principles of error detection and error correction codes
NPO-11487 871-10408 02
- Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 871-10430 06
- Brushless DC motor with dual windings
M-FS-21290 871-10530 02
- Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 872-10004 03
- Inertial reference unit
NPO-11518 872-10094 02
- Feedback control of variable conductance heat pipes
ARC-10460 872-10169 03
- Vortex servovalve for fluidic or electrical input
ARC-10155 872-10173 07
- FEEDBACK AMPLIFIERS**
- Pulse width-pulse rate modulator
ARC-10025 871-10497 01
- FEEDBACK CIRCUITS**
- Improved low cost ac-to-dc converter
NPO-11055 870-10076 01
- Precision full-wave rectifier
ARC-10101 870-10161 02
- Simple, accurate temperature-measuring instrument
MSC-12327 870-10303 01
- Efficient/reliable dc-to-dc inverter circuit
XGS-06226 870-10425 01
- Latching overcurrent circuit breaker
NPO-11131 870-10524 01
- Digital-voltage curve generator
NPO-11104 870-10590 02
- Polarographic carbon dioxide transducer amplifier
MSC-13728 871-10090 02
- Variable sweep-rate shortens dynamic testing time
LEWIS-11238 871-10251 02
- Pressure transducer with four-decade dynamic range
KSC-10384 871-10323 01
- Waveshaping electronic circuit
M-FS-14916 871-10429 01
- Wind tunnel buffet load measuring technique
ARC-10495 872-10022 06
- Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 872-10057 01
- Improved audio reproduction system
ARC-10404 872-10059 01
- Stable photosensor amplifiers
NPO-11561 872-10100 01
- Improved feedback shift register
NPO-10351 872-10226 01
- Carrier extraction circuit
JSC-14262 873-10094 02
- Integrable power gyrator
M-FS-22342 873-10159 02
- Optical feedback technique extends frequency response of photoconductors
LANGLEY-11768 875-10223 03
- Single radial magnetic bearing: A concept
GSFC-11978 875-10251 06
- FEEDBACK CONTROL**
- Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 870-10001 05
- Buck-boost dc voltage regulator
GSFC-10735 870-10005 01
- New procedure for design of self-adaptive control systems
LANGLEY-10255 870-10115 02
- Chebyshev minimax control theory
M-FS-20639 870-10315 03
- Signal phase switches offer greater dynamic range
NPO-10709 870-10393 01
- Artificial-feedback system
GSFC-10324 870-10421 02
- Active parallel redundancy for electronic integrator-type control circuits
NUC-10231 871-10040 01
- Stabilization of interferometer fringe patterns
ARC-10392 871-10119 02
- Automatic transmission line monitor
KSC-10385 871-10288 02
- Closed-loop control of stochastic nonlinear systems
MSC-13858 871-10306 09
- Improved molecular sorbent trap for high-vacuum systems
ARC-10056 871-10478 03
- Anemometer calibrator
M-FS-21424 871-10519 03
- Adaptive position control loop
ARC-10255 872-10052 02
- Oxygen pressure control for electrolysis cells
ARC-10250 872-10074 02
- Differential input preamplifier
ARC-10489 872-10165 01
- Counter lung
ARC-10248 872-10219 05
- Scanning technique for tracking small eye-movements
ARC-10488 872-10220 05
- Combination pressure regulator and safety valve: A Concept
MSC-14088 872-10446 06
- Digital slope-threshold data compressor
NPO-11630 873-10355 02
- Antiskid braking system
M-FS-22807 874-10146 06
- Improved control for nuclear/thermionic power source: A concept
NPO-13114 874-10167 03
- Swashplate feedback control for tilt-rotor aircraft
ARC-10854 874-10174 06
- Implementation of a self-controlling heater: A concept
GSFC-11752 874-10241 06
- Lead-oxygen closed-loop battery system
M-FS-23059 874-10267 06
- Foam-machining tool with eddy-current transducer
M-FS-23298 875-10309 08
- FEEDERS**
- Regulator for intravenous feeding
ARC-10758 875-10083 05
- FEEDING (SUPPLYING)**
- CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 871-10130 09
- Real-time pair-feeding of animals
ARC-10302 872-10298 05
- FERRIC ION**
- Controlled etching of printed-circuit boards
XGS-06306 870-10327 04
- FERRITES**
- Preparation of magnetic ferrofluids in alternative carrier liquids
GSFC-10159 870-10011 04
- A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 870-10033 01
- Constant-voltage drive current-steering switch
NPO-10743 870-10046 01
- Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 870-10104 04
- Detection and location of metal fragments in the human body
M-FS-14797 870-10107 05

- Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 B70-10374 09
- Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01
- Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03
- Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01
- Improved zinc oxide thermal control coatings
NPO-11139 B72-10711 04
- Digital data command bus
NPO-11637 B73-10035 01
- FERROMAGNETIC MATERIALS**
- Preparation of magnetic ferrofluids in alternative carrier liquids
GSFC-10159 B70-10011 04
- Metal detector system
ARC-10265 B70-10511 01
- Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06
- Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01
- Ferrolubricants
M-FS-23151 B75-10078 07
- FERROMAGNETISM**
- Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06
- FERROUS METALS**
- Improved zinc oxide thermal control coatings
NPO-11139 B72-10711 04
- FERTILIZERS**
- Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- FIBER OPTICS**
- Improved optical lens system
NPO-11311 B70-10354 03
- Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
- Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
- Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03
- Solid-state data interpretation system - A concept
M-FS-20587 B71-10366 02
- Scale factor gage for fiber optics inspection device
MSC-17361 B71-10496 07
- An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08
- Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
- Laser-actuated mechanical device
NPO-13105 B74-10166 03
- Laser system to detonate explosive devices
NPO-11743 B74-10194 03
- Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03
- Laser action generated within a light pipe: A concept
NPO-13531 B75-10127 03
- Contact-eutectic-lens fabrication technique
M-FS-23275 B75-10308 04
- FIBER STRENGTH**
- Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 B70-10183 04
- Design and evaluation of three-phase fibrous composite structures
HQ-10267 B70-10205 04
- New understanding of fiber composite materials
NPO-11605 B71-10161 04
- Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
- Silicon-fiber blanket solar-cell array concept
M-FS-22458 B73-10374 01
- FIBERS**
- Testing filamentary composites
HQ-10268 B70-10004 04
- Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
- Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
- Medical vest broadens treatment capability
KSC-10577 B70-10529 05
- Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
- Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
- Promising born/graphite/resin composites
M-FS-21126 B71-10217 04
- New materials for fireplace logs
M-FS-21363 B71-10339 04
- Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
- Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
- High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04
- Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
- Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04
- Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
- Equations to assess the impact resistance of fiber composites
LEWIS-11486 B72-10503 04
- High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04
- Fiber composite materials: A survey of fiber matrix interface mechanics
LEWIS-11924 B73-10007 04
- Technique for the polymerization of monomers for PPQ/graphite fiber composites
LEWIS-11879 B73-10014 04
- Residual stress effects on the impact resistance and strength of fiber composites
LEWIS-11984 B73-10063 04
- A new concept for joining dissimilar composites
M-FS-24307 B73-10148 04
- Silicon-fiber blanket solar-cell array concept
M-FS-22458 B73-10374 01
- Procedure for dispersing fiber bundles
LANGLEY-11224 B73-10438 08
- Reusable silica surface-insulation material
ARC-10721 B73-10504 04
- Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 B74-10154 04
- Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04
- Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08
- New insulation attachment method eliminates compatibility bondline stresses
MSC-12615 B74-10269 07
- Improved ion exchange membrane
NPO-13309 B75-10117 04
- Tailor making high performance graphite fiber reinforced PMR polyimides
LEWIS-12416 B75-10137 04
- Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06
- Improved polyelectrolyte for ion exchange fibers
NPO-13530 B75-10280 04
- FIELD COILS**
- Current switch has built-in time delay: A concept
MSC-17324 B72-10453 01
- FIELD EFFECT TRANSISTORS**
- Solid state switch provides high input-to-output isolation
HQ-10488 B70-10022 01
- Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
- Signal conditioner circuit for photomultiplier tube
XLA-10773 B70-10096 01
- Piezoelectric transducer
HQ-10548 B70-10157 01
- Precision full-wave rectifier
ARC-10101 B70-10161 02
- Constant current source for converting absolute temperatures to analog voltages
NPO-10733 B70-10164 02
- Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
- One-shot multivibrator with complementary metal-oxide-semiconductor components
MSC-13492 B70-10305 01
- A self-tuning filter
ARC-10264 B70-10337 01
- A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
- Small, efficient power supply for xenon lamps
MSC-13637 B70-10684 01
- Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02

- Subminiature transducer measures unsteady pressures
ARC-10349 871-10114 01
- Constant-amplitude, frequency-independent phase shifter
ARC-10269 871-10230 02
- Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 871-10375 08
- A differential ECG amplifier with single-ended output
ARC-10411 872-10061 05
- Stable photosensor amplifiers
NPO-11561 872-10100 01
- Frequency switch keyed oscillator
ARC-10412 872-10124 01
- Gate protective device for insulated gate field-effect transistors
M-FS-21626 872-10149 01
- Differential input preamplifier
ARC-10489 872-10165 01
- Low phase-shift amplifier
NPO-11663 872-10185 01
- Aluminum nitride insulating films for MOSFET devices
NPO-11859 872-10425 04
- Development of chip passivated monolithic complementary MISFET circuits with beam leads
M-FS-22264 872-10696 01
- Irradiation of MOS-FET devices to provide desired logic functions
GSFC-11061 872-10719 01
- Insulated-gate field-effect transistor strain sensor
LANGLEY-11012 872-10731 01
- Low phase-noise digital frequency divider
NPO-11569 873-10135 01
- Gyrator circuit using field effect transistors
M-FS-21433 873-10161 02
- P-channel silicone gate FET
M-FS-22505 873-10197 01
- Integrated p-channel MOS gyrator
M-FS-22343 873-10217 02
- Insulated ECG electrodes
JSC-14339 873-10220 05
- Data multiplexer using a tree switch
NPO-11333 873-10289 02
- Page composer to translate binary electrical data to optical form
M-FS-22589 875-10161 02
- Measurement of trap density in dielectric film
NPO-13443 875-10204 02
- FIELD EMISSION**
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 870-10687 01
- A study of nitride devices for computer memory applications
M-FS-20971 871-10350 03
- Self-protected electrodes limit field-emission current
ERC-10015 874-10253 01
- FIELD INTENSITY METERS**
Monitor for checking electric-field meters
KSC-10851 875-10296 02
- FIELD STRENGTH**
High-field superconducting nested coil magnet
ARG-10060 870-10061 03
- Development of superconductive magnets
LEWIS-11170 870-10678 03
- Radiation diffraction calculation program /DIFF2/
GSFC-11422 871-10462 09
- FIELD THEORY (ALGEBRA)**
Principles of error detection and error correction codes
NPO-11487 871-10408 02
- FIELD THEORY (PHYSICS)**
New procedure for determining minimum time orbit transfers
M-FS-14804 871-10376 09
- FIGURE OF MERIT**
Criteria for vibration testing
GSFC-10737 871-10266 06
- FILAMENT WINDING**
Testing filamentary composites
HQ-10268 870-10004 04
- Fabricating subscale components for application to full-scale parts
M-FS-20805 870-10390 07
- New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 870-10408 06
- Low-temperature radiation-resistant material for ball-bearing retainers
NUC-10058 870-10576 04
- Rugged, low-conductance, heat-flow probe
MSC-13443 870-10622 03
- Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 871-10268 08
- Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 872-10073 09
- New twisted intermetallic compound superconductor: A concept
LEWIS-11015 872-10282 04
- Large boron--epoxy filament-wound pressure vessels
NPO-11900 873-10038 08
- Filament winding technique produces strong lightweight oxygen tanks
M-FS-22470 873-10082 08
- FILAMENTS**
Unidirectional composite stiffening
HQ-10266 870-10054 04
- High temperature ion source
ERC-10197 870-10379 03
- Lamp modulator provides signal magnitude indication
KSC-10565 870-10700 01
- Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 871-10261 04
- High-strength large-diameter carbon-base fibers
LEWIS-11167 871-10403 04
- Device for measuring electric fields
ARC-10164 872-10148 03
- Titanium reinforced boron polyimide composite
M-FS-21916 872-10353 04
- Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 872-10491 04
- High strength high modulus ceramic fiber
M-FS-21266 872-10592 04
- FILES (TOOLS)**
Effects of hydrogen on ELI titanium alloy Ti-5Al-2.5Sn
M-FS-18815 870-10366 04
- Improved sheath removal technique for very small thermocouples
LEWIS-11228 871-10179 01
- FILLERS**
Improved welding of Rene-41
M-FS-18821 870-10367 08
- Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 870-10573 04
- Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 870-10600 04
- Filler-wire positioner for electron beam welding
MSC-15637 870-10604 08
- Improved fire-resistant coatings
GSFC-10072 871-10198 04
- Fabrication techniques for thorium-dispersed /TD/ nickel
LEWIS-11240 871-10369 08
- Removal of filler material from large high energy formed parts
M-FS-16326 872-10104 06
- Binary alloys for refractory-metal brazing
LEWIS-12184 874-10125 08
- FILLETS**
Repair of brazed steel honeycomb-sandwich panels with vertical pins only
MSC-15831 870-10624 08
- An improvement in blackbody cavity design
LANGLEY-10292 870-10711 03
- Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 871-10268 08
- FILLING**
Improved reversible coulometer cell
SAN-10051 871-10176 02
- Rapid method for sampling metals for materials identification
MSC-17332 871-10320 04
- FILM BOILING**
Water-filled heat pipe useful at moderate temperatures
M-FS-20543 870-10106 03
- Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 870-10259 04
- FILM CONDENSATION**
Fabrication of carbon film composites for high-strength structures
ARC-10613 872-10423 04
- FILM COOLING**
Heat-barrier coatings for combustion chambers
M-FS-18618 870-10363 07
- Turbulent mixing film cooling correlation
LEWIS-11417 872-10326 07
- FILM THICKNESS**
Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 870-10551 04
- Fabrication of carbon film composites for high-strength structures
ARC-10613 872-10423 04
- Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure
M-FS-21930 872-10476 06

Film handling system for laser scanner/recorder
 MSC-14121 B72-10539 07
 Method of measuring the thickness of radioactive thin films
 LEWIS-11971 B74-10065 03
 A high yield neutron target
 LEWIS-12058 B74-10066 03
 Compressible flow computer program for gas film seals
 LEWIS-12286 B75-10020 09

FILMS

Improved reinforcement for openings in difficult fabrics
 MSC-13554 B70-10489 08
 Electroplating on titanium alloy
 M-FS-21251 B71-10338 08
 Effects of the thermal sterilization procedure on polymeric products
 NPO-11688 B71-10362 04
 High speed, self-acting, face-contact shaft seal has low leakage and very low wear
 LEWIS-11598 B72-10114 07
 An efficient, simple dialyzer
 HQ-10741 B72-10522 05

FILTERS

Open-celled polyurethane foam
 KSC-10517 B70-10349 04
 Replaceable filters and cones for flared-tubing connectors
 MSC-15750 B70-10548 07
 RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
 GSFC-10983 B70-10664 02
 New filter technique improves home television reception
 MSC-13729 B71-10141 02
 Voltage-tunable parallel-T filter for remote operation
 NPO-11165 B72-10077 01
 Sheet plastic filters for solar cells
 NPO-11464 B72-10090 04
 Two-stage coaxial gas compressor
 ARC-10426 B72-10210 06
 A compact spectroradiometer for solar simulator measurements
 HQ-10683 B72-10327 03
 A rapid, precise, reciprocating-movement color filter system
 GSFC-11255 B72-10497 07
 Improved sampling of compressed gases for condensable hydrocarbon content
 KSC-10304 B72-10540 06

FILTRATION

Improved process for synthesizing anilinosilane compounds
 M-FS-14948 B70-10105 04
 Biological handbook for engineers
 M-FS-20349 B70-10255 05
 Improved photoionization mass spectrometer
 LANGLEY-10180 B70-10402 04
 Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01
 Elimination of gases and contamination from water
 KSC-10502 B70-10456 05
 Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
 MSC-17153 B71-10097 04
 Modifications to a vacuum assisted filtering device to minimize contamination
 MSC-13733 B71-10277 04

Solvation agent for disulfide precipitates from inhibited glycol-water solutions
 MSC-13695 B71-10331 04
 Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 B71-10475 05
 Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04
 Stabilization of porous glass reverse-osmosis membranes
 ARC-10646 B72-10309 04
 Purification of contaminated water by filtration through porous glass
 ARC-10655 B72-10412 04
 Industrial filter bags cleaned by high-frequency vibration: A concept
 M-FS-24445 B73-10398 06
 Application of biological filters in water treatment systems
 JSC-14226 B73-10404 05
 Backflushing system rapidly cleans fluid filters
 JSC-14273 B73-10405 06
 Sequential-strip and sequential-disk filters
 JSC-14592 B73-10430 06
 Two-phase, passive separator-and-filter assembly
 LANGLEY-10976 B74-10133 04
 Domestic wash water reclamation
 LANGLEY-11606 B74-10177 04
 Metallized polymeric foam material
 ARC-10860 B74-10218 04
 Microbial load monitor
 MSC-14062 B75-10167 05

FINANCIAL MANAGEMENT

Computer program for discounted cash flow/rate of return evaluations
 M-FS-19040 B71-10377 09

FINGERS

Ultrasonic bone densitometer
 M-FS-20994 B72-10450 05
 Therapeutic hand-exercising device with cycling pressure valve
 LANGLEY-11579 B74-10140 05
 Finger recording electrode system for electrical impedance plethysmograph
 ARC-10816 B74-10172 05

FINITE DIFFERENCE THEORY

AUTOTEM - Automated geometry meshing and heat conduction calculation
 NUC-10241 B71-10039 09
 Radiation view factor program
 M-FS-21075 B71-10106 09
 Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
 LEWIS-10788 B71-10392 09
 Computer program calculates transonic velocities in turbomachines
 LEWIS-10977 B71-10402 09
 Hybrid computer techniques for solving partial differential equations
 M-FS-21386 B71-10424 09
 Program for the transient response of ablating axisymmetric bodies including the effects of shape change
 LANGLEY-11049 B72-10068 09
 Computer program for predicting symmetric jet mixing of compressible flow in jets
 ARC-10730 B73-10263 09

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
 LEWIS-12129 B74-10130 09

FINITE ELEMENT METHOD

Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
 NPO-11069 B70-10067 09
 Computer program for predicting creep behavior of bodies of revolution
 NUC-11104 B71-10037 09
 FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
 NUC-10242 B71-10038 09
 Computer program for thermal analysis of shadow shields in a vacuum
 LEWIS-11236 B71-10115 09
 NASTRAN computer system level 12.1
 GSFC-10991 B71-10285 09
 Analysis of multilayered fiber composites
 LEWIS-11347 B71-10372 09
 Error evaluation for difference approximations to ordinary differential equations
 M-FS-21610 B71-10423 09
 Vibrational transfer functions for base excited systems
 M-FS-21432 B71-10441 09
 Vibration characteristics of ring-stiffened orthotropic shells of revolution
 LANGLEY-10989 B71-10535 09
 Vibrational transfer functions for complex structures
 M-FS-20744 B72-10648 09

FINS

Reduction of valve leakage - A concept
 NPO-12003 B71-10315 07

FIRE CONTROL

Detector for inspection of fire alarms
 GSFC-11600 B73-10128 06
 Radio-controlled, sound-operated switch
 LANGLEY-11641 B74-10143 03

FIRE CONTROL CIRCUITS

Fail-safe fire detection system
 LEWIS-12238 B74-10078 02

FIRE EXTINGUISHERS

Hermetic isolation valves
 ARC-10505 B72-10013 06
 Method for evaluating effectiveness of dry fire-extinguishing chemicals
 ARC-10869 B75-10027 04

FIRE FIGHTING

Emergency descent device
 M-FS-23074 B74-10226 05
 A band clamp with a spring toggle lever
 MSC-14736 B74-10240 07
 Liquid-cooled liner for helmets
 ARC-10534 B74-10249 05
 Powered fire nozzle for fast penetration of structures: A concept
 MSC-19528 B75-10111 06

FIRE PREVENTION

Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04
 Potassium silicate-zinc oxide solution for metal finishes
 GSFC-10361 B70-10600 04
 Inexpensive anti-fog coating for windows
 MSC-13530 B71-10149 04
 Improved fire-resistant coatings
 GSFC-10072 B71-10198 04

- Flame resistant elastic elastomeric fibers
MSC-13923-4 B72-10005 04
- Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
- Polyimide foams provide thermal insulation and fire protection
ARC-10464 B72-10300 04
- Nonflammable potting, encapsulating and/or conformal coating compound
MSC-13499 B72-10337 04
- Airlock caution and warning system
M-FS-21576 B72-10467 02
- An efficient prebreathing apparatus for humans during decompression
MSC-14151 B72-10690 05
- A versatile flammability test chamber
KSC-10126 B73-10111 06
- Combustion products generating and metering device
GSFC-11095 B74-10036 04
- Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08
- Fiber-modified polyurethane foam for ballistic protection
ARC-10714 B75-10062 04
- FIREPROOFING**
- Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04
- New materials for fireplace logs
M-FS-21363 B71-10339 04
- Halogenation of microcapsule walls
ARC-10410 B72-10161 04
- Fire retardant cellulosic foam
JSC-14336 B73-10085 04
- Flammability control for electrical cables and connectors
M-FS-21584 B73-10235 02
- Low-density polybenzimidazole foams for thermal insulation and fire protection
ARC-10823 B75-10056 04
- FIRES**
- Improved method of using paraformaldehyde as a disinfectant
MSC-15887 B71-10096 05
- Emergency-escape device
M-FS-22720 B73-10369 07
- FIRING (IGNITING)**
- Safe/armed explosive squib
XLA-10372 B70-10328 01
- Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01
- FIRST AID**
- Medical vest broadens treatment capability
KSC-10577 B70-10529 05
- FISHES**
- Miniature sonar fish tag
LANGLEY-11814 B75-10092 02
- FISSION**
- Data from various sources provide standard single-level resonance parameters for uranium 233
NUC-10229 B70-10357 03
- FISSION PRODUCTS**
- Computer program for afterheat temperature distribution for mobile nuclear power plant
LEWIS-11693 B72-10634 09
- FITTING**
- Pressurized suits can be fabricated with adjustable dimensions
MSC-12398 B71-10092 05
- Stable, inflatable life raft for high seas rescue operations
MSC-12393 B71-10167 05
- FITTINGS**
- Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06
- Special wrench for B-nuts reduces torque stress in tubing
MSC-15885 B70-10550 07
- High-reliability release mechanism
LEWIS-11233 B71-10080 07
- Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
- Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
- Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 B71-10355 05
- Tool expedites installation of BNC connectors
ARC-10327 B71-10480 07
- Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
- Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 B73-10258 08
- Artificial limb connection
KSC-10833 B74-10183 05
- Low-cost tool set for removing brazed fittings
NPO-13495 B75-10054 07
- FIXED WINGS**
- Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09
- FIXTURES**
- Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
- Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
- Durability tester for FCC connectors
M-FS-20128 B71-10418 08
- Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08
- Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
- Vise to hold bones or other irregular objects
ARC-10679 B72-10569 07
- FLAME DEFLECTORS**
- A four-panel enclosure protects from explosion
M-FS-21847 B72-10613 06
- FLAME IONIZATION**
- Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
- FLAME PROBES**
- Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03
- FLAME TEMPERATURE**
- Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03
- FLAMMABILITY**
- Flame-resistant thin panels of glass fabric-polyimide resin laminates
MSC-15562 B70-10490 04
- Improved heat-resistant garments
MSC-12109 B70-10544 08
- Flame resistant elastic elastomeric fibers
MSC-13923-4 B72-10005 04
- Hydrogen eliminator
ARC-10408 B72-10208 03
- Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
- Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 B72-10445 08
- A versatile flammability test chamber
KSC-10126 B73-10111 06
- Flammability study of materials in oxygen environments
M-FS-23306 B75-10310 04
- A flame-resistant modified polystyrene
MSC-14903 B75-10320 04
- FLAMMABLE GASES**
- An explosion-proof battery case
MSC-12335 B70-10304 01
- Risk management technique for liquefied natural gas facilities
KSC-11005 B75-10193 04
- FLANGES**
- High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
- Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03
- Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
- Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03
- Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03
- Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
- Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
- Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08
- Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06
- Hydraulic valve lifter remover
M-FS-21377 B72-10110 07
- Preventing oil migration in vacuum systems
GSFC-11253 B72-10129 04
- Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04
- Portable beveling tool
M-FS-16863 B72-10678 07
- Gas-flow restrictor
NPO-10117 B72-10703 03
- Improved geneva mechanism
LANGLEY-11443 B74-10030 06
- Design standards for low-profile flanges
M-FS-22708 B74-10033 09
- Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06

FLAPPING HINGES

Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07

FLAPS (CONTROL SURFACES)

Reduction of fan noise: A concept
ARC-10312 B72-10040 06
Integrated flight controller for light aircraft
ARC-10456 B72-10213 06
Flex flap
ARC-10771 B73-10502 06
Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
Thrust vector control for V/STOL aircraft
ARC-10788 B74-10049 06

FLARED BODIES

Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07

FLASH LAMPS

Projections of scan patterns on human retina
ARC-10181 B72-10193 05
An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03

FLASH POINT

Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04

FLASHING (VAPORIZING)

Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01
Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08

FLASHOVER

Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01

FLASKS

Modifications to a vacuum assisted filtering device to minimize contamination
MSC-13733 B71-10277 04

FLAT CONDUCTORS

Measuring the conductor spacing in flat conductor cables
M-FS-20560 B70-10015 08
Flat conductor cable connector with contact separation seal
M-FS-20757 B70-10387 01
Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 B70-10569 01
Fixture for plating stripped conductors of flat conductor cables /FCC/
M-FS-20122 B70-10719 08
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Folding tools for flat conductor cable harnesses
M-FS-20121 B71-10415 08
Spool for releasing and retracting flat conductor cable
M-FS-20234 B71-10416 08
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08
Durability tester for FCC connectors
M-FS-20128 B71-10418 08
Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 B71-10419 08

Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08

Sprue cutoff tool for molded FCC plugs
M-FS-20236 B71-10421 08

Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08

Multiedge slitter for FCC
M-FS-20112 B71-10457 08

Apparatus tests flexural durability of FCC
M-FS-20113 B71-10458 08

Cable insulation cut-through tester
M-FS-20114 B71-10459 08

Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 B71-10460 08

Hot-blade stripper for polyester insulation on FCC
M-FS-20117 B71-10461 08

Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08

Rotary stripper for shielded and unshielded FCC
M-FS-20119 B71-10465 08

Slitting flat conductor cables with the single cutting edge slitter
M-FS-20111 B72-10575 07

Flat conductor cable survey
M-FS-22493 B73-10055 01

Microelectronics packaging technique: A Concept
MSC-19399 B74-10192 01

FLAT LAYERS

Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01

FLAT PLATES

Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 B70-10551 04

High density electronic packaging module with improved cooling assembly
MSC-13639 B71-10088 01

Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06

Diffusion welding tool
LEWIS-11807 B73-10072 08

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09

Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
LANGLEY-11533 B74-10204 09

Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03

FLAT SURFACES

Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03

Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01

Microbiological surface sampling cart
LANGLEY-11069 B72-10395 05

Improved technique for inspection of planar surfaces by microscopy and interferometry
NPO-11893 B73-10143 03

Flat device for heat concentration or dispersion
LANGLEY-11699 B74-10291 03

FLATNESS

High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02

FLEXIBILITY

Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 B70-10273 04

Flexible protection for metal bellows
KSC-10520 B70-10350 06

Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05

Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04

Information retrieval system
HQ-10426 B70-10556 09

Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 B70-10569 01

Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04

Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04

Torch kit for welding in difficult areas
MSC-15704 B71-10070 08

Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06

Flat-conductor cable has rotary and linear flexibility
M-FS-21096 B71-10242 01

Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04

Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03

Frame modal analysis
MSC-17562 B71-10414 09

Longitudinal friction forces in piping design
M-FS-13754 B72-10103 01

Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02

Heart catheter cable and connector
ARC-10406 B72-10200 05

Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04

Explosive cord
M-FS-21928 B72-10293 08

Space suit may have orthotic applications
ARC-10275 B72-10297 05

Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 B72-10445 08

Flexible shielding system for radiation protection
LRL-10028 B72-10500 03

PTFE films with improved flexibility
NPO-12028 B72-10551 04

Micro-scale crease-and-fold apparatus
NPO-12029 B72-10552 06

- Method of attaching insulation tiles
MSC-12619 B75-10104 04
Lightweight ducts fabricated from reinforced plastics and elastomers
MSC-19482 B75-10173 06
- FLEXIBLE BODIES**
Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06
Flexible or rigid extending arm
MSC-13512 B70-10465 07
Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 B70-10577 07
Tool carrier
M-FS-21469 B72-10319 07
Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06
Flexible thermal device
M-FS-21630 B72-10612 04
Embossed metal diaphragm has two-way stretch
NPO-11635 B73-10298 08
Hybrid coordinate formulation used for the design of attitude control systems for flexible spacecraft
NPO-11714 B73-10300 09
- FLEXING**
Split radius-form blocks for tube benders
MSC-15773 B70-10038 08
Hydraulic brake safety valve
M-FS-16444 B70-10207 07
Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
M-FS-20556 B70-10598 06
TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07
Apparatus tests flexural durability of FCC
M-FS-20113 B71-10458 08
An improved aesthesiometer
MSC-13609 B72-10032 05
Universal inverted flexure
ARC-10345 B72-10122 07
Analytical failure determination of flow-induced fatigue in bellows
M-FS-18178 B72-10488 06
Improved high-temperature gimbal joint
LEWIS-11705 B72-10489 06
Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06
- FLICKER**
Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
- FLIGHT CHARACTERISTICS**
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
- FLIGHT CLOTHING**
Pressurized suits can be fabricated with adjustable dimensions
MSC-12398 B71-10092 05
- FLIGHT CONDITIONS**
New aircraft instrument indicates turbulence intensity
LANGLEY-11833 B75-10227 03
- FLIGHT CONTROL**
New model performance index for engineering design of control systems
HQ-10520 B70-10293 06
Chebyshev minimax control theory
M-FS-20639 B70-10315 03
Thumb-actuated control device
ARC-10019 B70-10407 01
A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06
Integrated flight controller for light aircraft
ARC-10456 B72-10213 06
Vented vectoring-nozzle for STOL and V/STOL aircraft
ARC-10839 B74-10058 06
- FLIGHT CREWS**
Aircrew oxygen system
ARC-10247 B72-10195 05
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
- FLIGHT HAZARDS**
Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09
- FLIGHT MECHANICS**
Ascent control analysis for S-II derivative launch vehicles, digital computer program
M-FS-24324 B73-10120 09
- FLIGHT RULES**
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
- FLIGHT SAFETY**
Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02
Cavitating Venturi sump
ARC-10504 B72-10012 06
- FLIGHT SIMULATION**
Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09
- FLIGHT SIMULATORS**
Virtual-image display system for flight simulators
ARC-10175 B71-10427 03
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
Roll function in a flight simulator
ARC-10557 B72-10417 02
- FLIGHT TEST INSTRUMENTS**
Optical discriminator system
LANGLEY-11580 B74-10139 03
- FLIGHT TESTS**
G-load indicator and warning device for aircraft
ARC-10806 B74-10171 02
Flight tests of vortex-attenuating splines
LANGLEY-11645 B74-10187 03
- FLIP-FLOPS**
Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
- Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01
Dual current readout for precision plating
MSC-15673 B70-10392 01
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02
Ground computer test trap
KSC-10574 B70-10561 09
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02
On-line analysis of random vibrations
ARC-10154 B71-10284 09
Novel shift register eliminates logic gates and power switching circuits
GSFC-10517 B71-10322 01
Externally programmed variable timer
M-FS-20776 B71-10437 04
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Theory and application of feedback shift registers
NPO-11486 B71-10451 02
Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02
Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01
Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
A simplified, compact static shift register
HQ-10723 B72-10591 02
Time-based priority selection for analog circuits
M-FS-24242 B73-10154 02
Digital random-number generator
ARC-10096 B73-10266 09
Digital servo controller behaves like synchro
KSC-10769 B73-10337 02
Frequency control circuit for all-digital phase-lock loops
NPO-11936 B73-10351 01
- FLOATING**
Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 B71-10173 07
Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
- FLOATING POINT ARITHMETIC**
Expanded sun-look angle program
MSC-13176 B70-10602 09
- FLOATS**
Stable, inflatable life raft for high seas rescue operations
MSC-12393 B71-10167 05
Floating baffle to improve efficiency of liquid transfer from tanks
KSC-10639 B73-10190 07
Wireless telemetry system for floating bodies
KSC-10855 B74-10028 06

- Highly-visible air-sea rescue marker
MSC-12564 B75-10166 05
- FLOCCULATING**
Preparation of magnetic ferrofluids in alternative carrier liquids
GSFC-10159 B70-10011 04
Polyelectrolytes with high charge density
NPO-11918 B74-10159 04
- FLOORS**
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
- FLOTATION**
Improved magnetic suspension technique
GSFC-11079 B74-10254 03
- FLOW**
An economical vent cover
M-FS-20692 B72-10348 07
Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
LEWIS-11635 B72-10586 09
- FLOW CHAMBERS**
Compact fluid-flow restrictor
MSC-15803 B70-10679 07
- FLOW CHARACTERISTICS**
Discharge coefficients for thick-plate orifices
LEWIS-11067 B70-10062 06
Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
Thermally induced oscillations in fluid flow
M-FS-20449 B70-10299 03
Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
Controlled flow assembly
M-FS-21716 B72-10404 07
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
Computer program to determine the irrotational nozzle admittance
LEWIS-12019 B73-10233 09
Compressible flow computer program for gas film seals
LEWIS-12286 B75-10020 09
Investigations of multiple jets in a crossflow
LEWIS-12102 B75-10149 03
- FLOW CHARTS**
Nondestructive spot tests allow rapid identification of metals
LANGLEY-10539 B70-10520 04
- Systems approach provides management control of complex programs
M-FS-20791 B70-10647 06
FORTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09
- FLOW COEFFICIENTS**
An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07
Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
- FLOW DEFLECTION**
Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
- FLOW DIRECTION INDICATORS**
Nonsteady flow-direction measurement
LEWIS-11499 B72-10403 06
Oscillating hot-wire anemometer
NPO-11634 B72-10609 02
- FLOW DISTORTION**
Method of stabilizing fluieric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
Computer program to generate engine inlet flow contour maps and distortion parameters
LEWIS-12247 B75-10005 09
- FLOW DISTRIBUTION**
Method of calculating blade-to-blade plane flow in centrifugal pump
M-FS-18087 B70-10124 06
Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 B70-10690 03
Variable-area nozzle automatically controls fluid flow
LEWIS-11217 B71-10222 07
Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03
Wind tunnel investigations at transonic Mach numbers
M-FS-20895 B71-10254 06
Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 B71-10337 06
A low-altitude satellite interaction study
GSFC-11384 B71-10499 09
Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09
Flow equation for porous plug and capillary tube flow restrictors
GSFC-11387 B72-10289 06
- Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
LEWIS-11270 B72-10546 06
Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06
Experimental study of flow distribution with circumferential manifolds
LEWIS-11649 B72-10738 06
Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds
LANGLEY-11250 B73-10183 06
Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds
LANGLEY-11249 B73-10184 06
Coaxial, self-aligning optical scanning system
LANGLEY-11711 B75-10034 03
- FLOW EQUATIONS**
Prediction of windage power loss in alternators
LEWIS-10939 B71-10074 06
Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
Low cost, logarithmic mass flow computer
LEWIS-11001 B71-10407 06
Flow equation for porous plug and capillary tube flow restrictors
GSFC-11387 B72-10289 06
Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
- FLOW GEOMETRY**
Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
Minimization of jet and core noise by rotation of flow
ARC-10712 B75-10131 06
- FLOW GRAPHS**
Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
- FLOW MEASUREMENT**
Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06
Very low velocity flow sensor uses fluidic techniques
ERC-10404 B70-10461 03
Water velocity meter
LANGLEY-10619 B70-10662 02
Compressed gas handbook
KSC-10662 B71-10272 03
Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09
Anemometer calibrator
M-FS-21424 B71-10519 03
Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02
Cryogenic gel flow viscometer
ARC-10523 B72-10180 03
Flow equation for porous plug and capillary tube flow restrictors
GSFC-11387 B72-10289 06

- Small turbing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
Nonsteady flow-direction measurement
LEWIS-11499 B72-10403 06
Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05
Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03
Use of small turbine-type flowmeters to measure flow in large pipes
LEWIS-11851 B72-10631 06
An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06
Ion-tracer anemometer
M-FS-21399 B73-10151 04
Laser velocimeter with transverse and on-axis sensitivity
ARC-10642 B73-10262 03
System for measuring transients in fluid flow
ARC-10852 B74-10217 03
A method for measuring cooling air flow in base coolant passages of rotating turbine blades
LEWIS-12433 B75-10017 03
Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 B75-10145 08
Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04
Improved axisymmetric potential flow computer program
LEWIS-12387 B75-10243 09
- FLOW REGULATORS**
Adjustable flow restrictor
MSC-13433 B70-10037 07
Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
A temperature-controlled fluid flow regulator
M-FS-14259 B70-10283 07
Bidirectional flow meter
M-FS-18737 B70-10589 07
Method of stabilizing fluieric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 B70-10680 03
Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
Combination throttle and shutoff valve
M-FS-21513 B72-10287 07
Small turbing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
Controlled flow assembly
M-FS-21716 B72-10404 07
Self-aligning, low-pressure sealing poppet valve
MSC-17745 B72-10538 07
- Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06
Gas-flow restrictor
NPO-10117 B72-10703 03
Implantable drug therapy device: A concept
NPO-11934 B72-10708 05
Remotely operated gas-pressure regulator and shuttle valve
NPO-13201 B74-10298 07
Regulator for intravenous feeding
ARC-10758 B75-10083 05
Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06
- FLOW RESISTANCE**
Flow equation for porous plug and capillary tube flow restrictors
GSFC-11387 B72-10289 06
A shut-off valve for flexible tubing
M-FS-21731 B72-10687 07
Experimental study of flow distribution with circumferential manifolds
LEWIS-11649 B72-10738 06
Full-flow fluid filter
NPO-13118 B74-10277 02
- FLOW STABILITY**
Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
Nonsteady flow-direction measurement
LEWIS-11499 B72-10403 06
- FLOW THEORY**
Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
Quick calculation method for fluid flow through duct systems
M-FS-15069 B70-10487 02
Algorithm for nonlinear stationary Navier-Stokes problem
ARC-10960 B75-10143 09
- FLOW VELOCITY**
High pressure flow-rate switch
NPO-10722 B70-10028 07
Adjustable flow restrictor
MSC-13433 B70-10037 07
A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01
Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept
NPO-10755 B70-10090 07
Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04
Precision control system for engine fuel
NPO-12017 B70-10244 07
Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
Water velocity meter
LANGLEY-10619 B70-10662 02
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03
- Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
An unconfined, large-volume hydrogen/air explosion
NUC-11000 B71-10041 03
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 B71-10120 03
Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
Proportional pulsed pilot valve
ARC-10228 B71-10468 07
Anemometer calibrator
M-FS-21424 B71-10519 03
Cryogenic gel flow viscometer
ARC-10523 B72-10180 03
Polymeric coatings using electronic excitation
HQ-10698 B72-10257 04
Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
LEWIS-11270 B72-10546 06
Oscillating hot-wire anemometer
NPO-11634 B72-10609 02
Accurate measurement of gas volumes by liquid displacement
ARC-10723 B72-10699 03
Gas-flow restrictor
NPO-10117 B72-10703 03
Transonic divider for gas chromatograph effluents
NPO-11479 B72-10706 03
Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06
Laser velocimeter for simultaneous two-dimensional velocity measurements
ARC-10637 B73-10267 02
Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09
A method for measuring cooling air flow in base coolant passages of rotating turbine blades
LEWIS-12433 B75-10017 03
- FLOW VISUALIZATION**
Wind tunnel investigations at transonic Mach numbers
M-FS-20895 B71-10254 06
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
- FLOWMETERS**
Electrodynamic induction flowmeter
HQ-10230 B70-10024 01
Gas flowmeter
M-FS-20663 B70-10050 07

Removal of flowmeter bearings from blind cavities
 M-FS-18713 B70-10227 06
 Precision control system for engine fuel
 NPO-12017 B70-10244 07
 Economic method for measuring ultra-low flow rates of fluids
 NPO-12064 B70-10531 04
 Pressure sensitive gas flow meter
 ARC-10219 B72-10049 06
 Low noise electromagnetic flowmeter
 M-FS-21291 B72-10108 02
 Small turbing-type flowmeters for liquid hydrogen
 LEWIS-11535 B72-10331 06
 Intravenous fluid flow meter concept for zero gravity environment
 MSC-14123 B72-10461 05
 Use of small turbine-type flowmeters to measure flow in large pipes
 LEWIS-11851 B72-10631 06
 Particle-fluid interactions for flow measurements
 M-FS-21727 B73-10117 06

FLOX

Digital computer program for analyzing chugging instabilities
 LEWIS-11294 B71-10215 09
 Fabrication of cooled, graphite-lined structures
 LEWIS-11741 B72-10593 08

FLUERICS

Flueric-controller pneumatic stepping motor system
 LEWIS-11051 B70-10332 02
 Method of stabilizing flueric vortex valves and vortex amplifiers
 LEWIS-10553 B70-10668 07
 Wall attachment, flueric crossover "AND" gate
 XLA-07391 B71-10178 07
 Vortex servovalve for fluidic or electrical input
 ARC-10155 B72-10173 07
 Ignition of sounding rocket motors with hand-pumped air
 LANGLEY-11152 B74-10202 03

FLUID AMPLIFIERS

Temperature-controlled fluidic device A concept
 HQ-10446 B70-10167 03
 Very low velocity flow sensor uses fluidic techniques
 ERC-10404 B70-10461 03
 Control system for an artificial heart
 LEWIS-11057 B70-10469 05
 Pneumatic amplifier controls high pressure fluid supply
 MSC-12121 B71-10081 07
 Vortex servovalve for fluidic or electrical input
 ARC-10155 B72-10173 07
 Integrated monopropellant thruster
 NPO-12004 B72-10502 06

FLUID DYNAMICS

Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
 M-FS-18696 B70-10259 04
 Uniform data system standardizes technical computations and the purchasing of commercially important gases
 NUC-10549 B70-10333 04
 Reducing streak film data via electronic cross correlator
 M-FS-18804 B70-10365 01
 Low temperature fluid blender
 LEWIS-11206 B71-10058 04

Updated, expanded, fluid properties handbook
 M-FS-21169 B71-10078 04
 Hydrostatic liquid-bearing for precision gyro
 M-FS-21138 B71-10207 07
 Water cavity degasser for electrolysis cells
 ARC-10244 B72-10246 03
 Cavitation data for hydraulic equipment
 LEWIS-11642 B72-10384 07
 Water impact loads
 M-FS-21955 B72-10621 09
 Computer program for predicting symmetric jet mixing of compressible flow in jets
 ARC-10730 B73-10263 09
 Computer program for the prediction of reorientation flow dynamics
 LEWIS-11816 B73-10307 09
 Improved syncom-type fluid damper
 GSFC-11205 B73-10478 06
 Analyses of unsteady entropic-flow processes
 M-FS-24475 B73-10482 03
 Fluid dynamics test method
 NPO-11895 B74-10211 03
 Computer program for calculating thermodynamic and transport properties of fluids
 LEWIS-12520 B75-10188 09

FLUID FILMS

Liquid cryogenic lubricant
 LEWIS-11075 B70-10347 07
 Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
 LEWIS-11152 B71-10173 07
 Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 B71-10509 09
 Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04
 Angular velocity and acceleration meter
 LEWIS-11466 B72-10183 06
 Chuck for delicate drills
 ARC-10660 B72-10414 07

FLUID FILTERS

Diffusion filter eliminates fringe effects of coherent laser light source
 NPO-10417 B70-10226 03
 Precision control system for engine fuel
 NPO-12017 B70-10244 07
 Elimination of gases and contamination from water
 KSC-10502 B70-10456 05
 Modifications to a vacuum assisted filtering device to minimize contamination
 MSC-13733 B71-10277 04
 Liquid-fuel valve with precise throttling control
 NPO-10808 B71-10449 07
 A permeable rotating-wheel solvent extractor
 LRL-10033 B72-10343 04
 Purification of contaminated water by filtration through porous glass
 ARC-10655 B72-10412 04
 Backflushing system rapidly cleans fluid filters
 JSC-14273 B73-10405 06
 Sequential-strip and sequential-disk filters
 JSC-14592 B73-10430 06
 Full-flow fluid filter
 NPO-13118 B74-10277 02

FLUID FLOW

Electrodynamic induction flowmeter
 HQ-10230 B70-10024 01
 Adjustable flow restrictor
 MSC-13433 B70-10037 07
 Spinarc gas tungsten arc torch holder
 MSC-15646 B70-10041 08
 Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 B70-10106 03
 Method of calculating blade-to-blade plane flow in centrifugal pump
 M-FS-18087 B70-10124 06
 Four-way, full-throttling valve concept
 MSC-13437 B70-10165 07
 Vapor feeding of liquid metal cathodes
 HQ-10213 B70-10168 03
 Use of nonwetttable membranes for water transfer
 LANGLEY-10743 B70-10235 04
 Optically activated magnetic recording tape
 GSFC-10275 B70-10247 01
 A temperature-controlled fluid flow regulator
 M-FS-14259 B70-10283 07
 A concept for improving efficiency of multistage centrifugal pumps
 LEWIS-10966 B70-10287 07
 Thermally induced oscillations in fluid flow
 M-FS-20449 B70-10299 03
 Volumetric leak detector
 MSC-11325 B70-10302 07
 Low heat-gain cryogenic-liquid transfer system
 MSC-15165 B70-10306 07
 Flexible protection for metal bellows
 KSC-10520 B70-10350 06
 Single-phase heat transfer improved by helical inserts in tubes
 LEWIS-11063 B70-10362 07
 Small hydraulic turbine drives
 LEWIS-11064 B70-10416 07
 Pilot-boost control valve
 M-FS-20635 B70-10558 07
 A simplified method for determining convective heat-transfer coefficients
 LEWIS-11156 B70-10575 03
 Efficient pressure-transformer for fluids
 M-FS-20830 B70-10595 07
 Compact fluid-flow restrictor
 MSC-15803 B70-10679 07
 Chatter-free check valve - A concept
 MSC-13262 B71-10067 07
 Determination of gas volume trapped in a closed fluid system
 MSC-15685 B71-10094 06
 Thermal conductivity of gaseous and liquid hydrogen
 NUC-10558 B71-10105 04
 Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03
 Spray momentum measuring system
 MSC-12305 B71-10137 05
 An investigation of tandem-row, high-head pump inducers
 M-FS-21139 B71-10152 07
 Automatic amino acid analyzer
 ARC-10215 B71-10165 04
 Variable-area nozzle automatically controls fluid flow
 LEWIS-11217 B71-10222 07
 Viscoelastic cushion for patient support
 MSC-12447 B71-10316 05

Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06

Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06

Zero-leakage valves
ARC-10506 B72-10024 06

Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02

Fluidic ignition detection
M-FS-21498 B72-10158 06

Fluidic pressure regulators
ARC-10474 B72-10162 06

Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09

Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07

Combination throttle and shutoff valve
M-FS-21513 B72-10287 07

A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01

A closed loop cryogenic environment pressure regulating system
MSC-13880 B72-10390 02

A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07

Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06

Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05

Analytical failure determination of flow-induced fatigue in bellows
M-FS-18178 B72-10488 06

Self-aligning, low-pressure sealing poppet valve
MSC-17745 B72-10538 07

A thermocouple thermode for small animals
ARC-10550 B72-10559 05

Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06

Use of small turbine-type flowmeters to measure flow in large pipes
LEWIS-11851 B72-10631 06

Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06

Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02

Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09

Propellant feed systems transients
MSC-17848 B72-10677 06

Accurate measurement of gas volumes by liquid displacement
ARC-10723 B72-10699 03

Implantable drug therapy device: A concept
NPO-11934 B72-10708 05

Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06

Geysering inhibitor pipe
KSC-10615 B73-10110 07

Particle-fluid interactions for flow measurements
M-FS-21727 B73-10117 06

Pressure drop and pumping power for fluid flow through round tubes
M-FS-24172 B73-10186 09

Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 B73-10417 03

Modular support blocks for fluid lines
MSC-19335 B74-10023 07

Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09

Thin-film temperature sensor
NPO-11775 B74-10100 01

System for measuring transients in fluid flow
ARC-10852 B74-10217 03

Study of fluid flow by charged particles
ARC-10925 B75-10028 03

Algorithm for nonlinear stationary Navier-Stokes problem
ARC-10960 B75-10143 09

FLUID INJECTION
Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06

Variable-area nozzle automatically controls fluid flow
LEWIS-11217 B71-10222 07

FLUID JETS
Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07

Controlled droplet spray generator
LEWIS-11193 B70-10652 07

Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03

FLUID LOGIC
Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06

FLUID MECHANICS
Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
NPO-11069 B70-10067 09

Hydraulic brake safety valve
M-FS-16444 B70-10207 07

Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07

Self-sealing, easily purged quick-disconnect hose coupling
MSC-17009 B70-10699 07

Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07

Cavitating Venturi sump
ARC-10504 B72-10012 06

Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06

Nonsteady flow-direction measurement
LEWIS-11499 B72-10403 06

Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05

Water impact loads
M-FS-21955 B72-10621 09

Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08

A shut-off valve for flexible tubing
M-FS-21731 B72-10687 07

Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03

FLUID POWER
Improved burst disk/cutter assembly
KSC-10516 B70-10583 07

Integrated monopropellant thruster
NPO-12004 B72-10502 06

Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06

FLUID SWITCHING ELEMENTS
Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07

FLUID TRANSMISSION LINES
Special wrench for B-nuts reduces torque stress in tubing
MSC-15885 B70-10550 07

Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07

Modular support blocks for fluid lines
MSC-19335 B74-10023 07

Design criteria monograph on transmission seals
LEWIS-12403 B75-10011 07

FLUIDIC CIRCUITS
Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06

Interconnections for fluidic circuits
ARC-10481 B72-10164 02

Fluidic systems may improve combustion in automotive engines
ARC-10582 B72-10250 06

Integrated monopropellant thruster
NPO-12004 B72-10502 06

FLUIDICS
Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06

Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03

Simplified computation of compressible fluid flow parameters
KSC-10400 B70-10225 06

Flexible protection for metal bellows
KSC-10520 B70-10350 06

Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06

Bimorph piezoelectric device functions as flapper valve
ERC-10082 B70-10382 01

Very low velocity flow sensor uses fluidic techniques
ERC-10404 B70-10461 03

Low temperature fluid blender
LEWIS-11206 B71-10058 04

Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05

Wall attachment, fluoric crossover "AND" gate
XLA-07391 B71-10178 07

Gyro spring augmentation system
ARC-10496 B72-10010 06

Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06

Cavitating Venturi sump
ARC-10504 B72-10012 06

- Microresonator for damping flow oscillations
M-FS-18401 B72-10105 06
- Fluidic ignition detection
M-FS-21498 B72-10158 06
- Fluidic pressure regulators
ARC-10474 B72-10162 06
- Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
- Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
- Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06
- Indexing film with a fluidic sensor
MSC-14117 B72-10501 02
- Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
LANGLEY-11897 B75-10264 06
- FLUIDIZED BED PROCESSORS**
Fluidized-bed combustion reduces atmospheric pollutants
AEC-10085 B72-10431 04
- FLUIDS**
Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06
- Laser beam deflection control: A concept
MSC-13814 B72-10411 02
- Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06
- Linear accelerator: A concept
KSC-10618 B72-10636 06
- Fluid operated quick release mechanism
M-FS-20205 B72-10640 07
- High torque bellows seal rotary drive
LEWIS-11813 B72-10681 07
- Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06
- Long-term material compatibility testing system
NPO-11776 B73-10385 04
- FLUORESCENCE**
Multilayer screen gives cathode ray tube high contrast
ERC-10217 B70-10454 01
- Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
- Illumination control system
ARC-10527 B72-10167 02
- Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04
- Two new methods to increase the contrast of track-etch neutron radiographs
LEWIS-11893 B73-10027 03
- Rocket plume properties measured in space simulators
NPO-11608 B73-10137 03
- Dye laser remote sensing of marine plankton
LANGLEY-11382 B73-10359 05
- Fluorescent color coding of power receptacles
MSC-19504 B75-10109 01
- Laser-excited fluorescence for measuring atmospheric pollution
NPO-13231 B75-10275 02
- FLUORIDES**
Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04
- Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
- Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
- FLUORINATION**
Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04
- Improved protection for silicon solar cells
LEWIS-11065 B70-10706 08
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02
- FLUORINE**
Self-lubricating fluorine shaft seal material
HQ-10112 B70-10222 04
- Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 B70-10453 04
- Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
- Main tank injection pressurization program
LEWIS-11368 B72-10069 09
- High-power CW laser using hydrogen-fluorine reaction
NPO-13623 B75-10183 03
- FLUORINE COMPOUNDS**
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
- Preparation of stable colloidal dispersions in fluorinated liquids
HQ-10580 B72-10529 04
- FLUORINE ORGANIC COMPOUNDS**
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
- TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07
- Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04
- Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04
- Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04
- FLUORO COMPOUNDS**
Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 B70-10395 06
- Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 B71-10291 04
- Technique for increasing yield of trifluoronitrosomethane-tetrafluoro-
ne copolymer
ARC-10566 B72-10418 04
- Nonflammable potting-encapsulating and conformal coating compounds
JSC-14164 B73-10102 04
- Flammability control for electrical cables and connectors
M-FS-21584 B73-10235 02
- FLUOROCARBONS**
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
- Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03
- Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 B70-10453 04
- New type of nonflammable paper
MSC-13432 B70-10546 04
- Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
- Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03
- Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
- Functionally terminated liquid nitroso fluorocarbon terpolymers
M-FS-21539 B72-10493 04
- A new intermediate for the production of flexible stable polymers
M-FS-22355 B73-10080 04
- Manufacture and quality control of interconnecting wire harnesses
M-FS-22511 B73-10211 01
- FLUSHING**
Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07
- Dry ice plug for hydraulic and pneumatic pipe flushing
MSC-12548 B72-10496 06
- FLUTTER**
A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06
- Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02
- Simple two-speed tape transport drive
GSFC-10981 B71-10409 06
- Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06
- FLUX (RATE)**
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
- A transformer of closely spaced pulsed waveforms
LEWIS-11045 B70-10351 01
- Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09
- Differential input preamplifier
ARC-10489 B72-10165 01
- Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
- Ultraviolet hydrogen-discharge lamp
MSC-14793 B75-10272 03

FLUX DENSITY

Improved electron-beam welding technique

M-FS-20714 B70-10127 08

High energy density electrochemical cell

LEWIS-10969 B70-10151 01

Inexpensive net solar flux radiometer

HQ-10087 B70-10296 03

Two-axis flux gate magnetometer

GSFC-10441 B70-10345 01

Conical electromagnetic radiation flux concentrator

M-FS-21613 B72-10147 03

Acoustic spectral analysis and testing techniques

NPO-11554 B72-10341 03

Al/C12 molten salt battery

HQ-10696 B72-10527 01

Numerical solution of potential flow problems in terms of flux components

M-FS-21751 B72-10667 09

Calorimetric detection of neutral-atom content of ion beam

LANGLEY-11505 B74-10184 03

Improved magnetic suspension technique

GSFC-11079 B74-10254 03

FLUX QUANTIZATION

Kinetic inductance measured in a superconducting wire

ERC-10305 B70-10491 03

FLUXES

High-temperature nickel-brazing alloy

LEWIS-10928 B70-10537 08

FLYBY MISSIONS

Rapid analysis of electric propulsion missions

ARC-10430 B72-10299 09

FLYING SPOT SCANNERS

Pattern recognition technique

NPO-11337 B71-10187 06

Analog table look-up device identifies unknown terrain

MSC-13816 B72-10033 03

Aircraft communication via telefacsimile system

M-FS-20839 B72-10139 02

Projections of scan patterns on human retina

ARC-10181 B72-10193 05

Roll function in a flight simulator

ARC-10557 B72-10417 02

FLYWHEELS

Multimode ergometer system

M-FS-21044 B71-10107 05

FOAMS

Economical weatherproof helical antenna

XKS-08485 B70-10016 01

Immersed ultrasonic inspection of high acoustical attenuative structures

MSC-15702 B70-10055 03

Phenolic cutter for machining foam insulation

M-FS-14170 B70-10089 07

Foaming-electrolyte fuel cell

HQ-10147 B70-10097 01

Rugged, low-conductance, heat-flow probe

MSC-13443 B70-10622 03

Nonflammable organic adhesives effective over wide temperature range

MSC-13586 B70-10644 04

Microwave cryogenic thermal-noise standards

NPO-11424 B71-10139 03

Viscoelastic cushion for patient support

MSC-12447 B71-10316 05

Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line

KSC-10518 B71-10364 03

Polyimide foams provide thermal insulation and fire protection

ARC-10464 B72-10300 04

Evaluating foam heterogeneity

AEC-10046 B72-10365 04

Deflection resistance indicator

M-FS-24010 B72-10401 04

A monostain test apparatus

M-FS-24221 B72-10679 06

Fire retardant cellulosic foam

JSC-14336 B73-10085 04

Thermally-stable, syntactic pyrrone foams

LANGLEY-11325 B74-10135 06

Low-density polybenzimidazole foams for thermal insulation and fire protection

ARC-10823 B75-10056 04

Fiber-modified polyurethane foam for ballistic protection

ARC-10714 B75-10062 04

Foam-machining tool with eddy-current transducer

M-FS-23298 B75-10309 08

FOCI

Enhancing efficiency of single, large-aperture antennas

HQ-10597 B71-10287 01

FOCUSING

Multispectral facsimile reproducer

LANGLEY-10618 B70-10360 03

Automatic optometer operates with infrared test pattern

ARC-10095 B70-10401 05

Visual focus stimulator aids in study of the eye's focusing action

ARC-10049 B70-10568 05

Multiple focusing magnets used for velocity selection of atoms

GSFC-10128 B70-10581 03

Absolute focus lock for microscopes

LANGLEY-10184 B70-10728 07

Improved source of infrared radiation for spectroscopy

M-FS-20613 B71-10031 03

Radiant energy absorption enhancement in optical imaging systems

ARC-10194 B71-10112 03

Application of calibration masks to TV vidicon tube

KSC-10589 B71-10404 02

Improved plasma accelerator

ARC-10109 B71-10454 03

Modified camera records lens settings on film

MSC-12363 B71-10494 03

Scale factor gage for fiber optics inspection device

MSC-17361 B71-10496 07

Hand-held photomicroscopy system

ARC-10468 B72-10190 03

Projections of scan patterns on human retina

ARC-10181 B72-10193 05

Automatic focus control for facsimile camera

LANGLEY-11213 B73-10361 02

FOG

Inexpensive anti-fog coating for windows

MSC-13530 B71-10149 04

Atmospheric pollution measurement by optical cross correlation methods - A concept

M-FS-12078 B71-10224 02

FOILS (MATERIALS)

Inexpensive high-temperature furnace for thermocouple calibration

NUC-10372 B71-10046 03

Simple, shock-free, quick-release connector - A concept

LEWIS-11178 B71-10146 07

An investigation of tandem-row, high-head pump inducers

M-FS-21139 B71-10152 07

Improved insulating materials effective at extremely high temperatures

NPO-12067 B71-10289 04

Granular two-phase insulation systems

NPO-12068 B71-10290 04

Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line

KSC-10518 B71-10364 03

Aluminum foil interconnects for solar cell panels

ARC-10374 B72-10058 08

Boron-10 loaded inorganic shielding material

M-FS-22280 B72-10740 04

FOLDING

Flat-conductor cable has rotary and linear flexibility

M-FS-21096 B71-10242 01

Folding tools for flat conductor cable harnesses

M-FS-20121 B71-10415 08

Seating tool for preparing molded-plug terminations on FCC

M-FS-20123 B71-10417 08

Folding tool for preparing FCC molded-plug terminations

M-FS-20116 B71-10422 08

Micro-scale crease-and-fold apparatus

NPO-12029 B72-10552 06

FOLDING STRUCTURES

Foldable patterns form construction blocks

MSC-13860 B71-10523 08

Horn antenna with v-shaped corrugated surface

LANGLEY-11112 B74-10260 01

FOOD

Insolubilized enzymes for food synthesis

ARC-10568 B72-10247 04

Effect of the method of process on the control of microbial growth by water activity in foods

MSC-14234 B72-10732 05

Rapid detection of bacteria in foods and biological fluids

GSFC-11738 B73-10045 05

Control of nonenzymatic browning in intermediate-moisture foods

MSC-14835 B75-10317 05

FOOD INTAKE

Metabolic balance analysis program

M-FS-21237 B71-10384 09

Mercury in the environment

AEC-10048 B72-10233 05

Real-time pair-feeding of animals

ARC-10302 B72-10298 05

FORCE DISTRIBUTION

Lift distribution in a rectangular jet

ARC-10424 B71-10030 09

FORCED CONVECTION

Compact electric heater

LEWIS-11172 B70-10677 03

- Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
- Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- FORCED VIBRATION**
Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06
- Mechanical impedance and acoustic mobility measurement techniques of specifying vibration environments
M-FS-22016 B73-10059 06
- FORECASTING**
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
- Manpower forecast program
NPO-11551 B71-10244 09
- Program audit, A management tool
KSC-10557 B71-10380 01
- FOREST FIRE DETECTION**
Automatic lightning location system
AEC-10077 B72-10372 02
- FORESTS**
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
- FORMALDEHYDE**
Colorimetric detection of ethylene glycol vapor
MSC-13222 B70-10031 03
- Improved method of using paraformaldehyde as a disinfectant
MSC-15887 B71-10096 05
- Self-sterilizing polymers
M-FS-22054 B73-10090 04
- Formaldehyde monitor for automobile exhausts
LANGLEY-11352 B73-10228 04
- FORMATES**
High energy density electrochemical cell
LEWIS-10969 B70-10151 01
- FORMING TECHNIQUES**
Split radius-form blocks for tube benders
MSC-15773 B70-10038 08
- Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
- Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
- Low cost anti-galling bushings
LEWIS-11724 B72-10359 08
- Autoclave heat treatment for prealloyed powder products
LEWIS-11953 B73-10172 04
- Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 B74-10141 08
- Lightweight ducts fabricated from reinforced plastics and elastomers
MSC-19482 B75-10173 06
- Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 B75-10246 04
- FORMULAS**
Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04
- FORMULAS (MATHEMATICS)**
Polynomial-smoothing and derivative-estimating formulas for functions of one or two independent variables
NPO-11256 B70-10078 09
- Technique for lowering the noise figure in RF amplifiers
HQ-10435 B70-10650 01
- Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
- Numerical integration of second order differential equations
M-FS-20536 B71-10186 09
- Method for determining failure potential of pressure vessels
M-FS-20564 B71-10270 06
- Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
- FORMULATIONS**
Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
- FORTAN**
Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
NPO-11069 B70-10067 09
- Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
- A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09
- Calculation of the inertia tensor and center of gravity of complex bodies
NPO-10827 B70-10158 09
- Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
- Improved optical lens system
NPO-11311 B70-10354 03
- COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
- Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
- Information retrieval system
HQ-10426 B70-10556 09
- Neutron ages computed from experimental activation data
LEWIS-10949 B70-10557 09
- Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09
- A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09
- Expanded sun-look angle program
MSC-13176 B70-10602 09
- Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
- Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09
- Computerized toroidal transformer design
NPO-11115 B70-10606 09
- Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09
- Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
- Separation of two bodies in space
NPO-10663 B70-10625 09
- A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
- Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
- Digital simulation program improved
M-FS-01504 B70-10705 09
- Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
- Fast Mars communication geometry program
LANGLEY-10658 B71-10002 09
- Non-symmetrical two dimensional scattering program
NPO-11576 B71-10007 09
- Symmetrical two dimensional scattering program
NPO-11578 B71-10008 09
- Tracking antenna deformation program
GSFC-11191 B71-10017 09
- Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
- Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
- FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
- AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
- FORTAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
- Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
- Radiation view factor program
M-FS-21075 B71-10106 09
- Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
- Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
- CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09
- Multi-dimensional real Fourier transform
NPO-11648 B71-10133 09
- High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
- Subroutines for evaluating single and multiple integrals using modified Romberg method
NPO-11718 B71-10138 09
- Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
- Quick response targeting program
M-FS-15157 B71-10147 09
- Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 B71-10151 09

- Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
- ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
- Rotordynamic response analysis program
HQ-10579 B71-10211 09
- Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
- DSIF station schedules
NPO-11547 B71-10243 09
- Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09
- Battery simulation program
NPO-11580 B71-10250 09
- Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
- Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
- Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
- Determination of radiation interchange factors
MSC-13475 B71-10295 09
- Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
- Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
- MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
- Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
- Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09
- Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
- New procedure for determining minimum time orbit transfers
M-FS-14804 B71-10376 09
- Study-simulation of space station dynamics
M-FS-21227 B71-10382 09
- Metabolic balance analysis program
M-FS-21237 B71-10384 09
- Thermal analysis system /TAS-1/ program
NPO-11849 B71-10386 09
- Tolerance analysis program
MSC-17487 B71-10389 09
- Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
- Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09
- Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
- Computer program optimizes design of nuclear radiation shields
LEWIS-10998 B71-10400 09
- Microbial burden prediction model program
NPO-11709 B71-10401 09
- Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
- Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
- Frame modal analysis
MSC-17562 B71-10414 09
- Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09
- Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09
- FORTRAN 4 digital program changer
MSC-17567 B71-10448 09
- Optical design and analysis program
GSFC-11393 B71-10456 09
- Radiation diffraction calculation program /DIFF2/
GSFC-11422 B71-10462 09
- Cloud-free resolution element statistics program
GSFC-11494 B71-10463 09
- Landing dynamics program for impact attenuating vehicles /LANDIT/
NPO-10840 B71-10472 09
- Computer design of extension springs
M-FS-24073 B71-10473 09
- Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
- Synthesis of dynamic systems
M-FS-21490 B71-10491 09
- Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 B71-10492 09
- A low-altitude satellite interaction study
GSFC-11384 B71-10499 09
- Automated preventive maintenance program
GSFC-11408 B71-10500 09
- Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09
- Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09
- Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09
- A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
- Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
- Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
- Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
LANGLEY-11048 B72-10067 09
- Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
- Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
LEWIS-11636 B72-10070 09
- Program for determination of radiation interchange factors
MSC-17563 B72-10071 09
- Wind trajectory tracing for air pollution studies (AIRPOL)
NPO-11892 B72-10072 09
- Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09
- Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09
- Misfit and miss-drag programs
LANGLEY-10932 B72-10153 09
- Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09
- Snap dynamics
M-FS-21531 B72-10265 09
- Rapid analysis of electric propulsion missions
ARC-10430 B72-10299 09
- Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
- Memory reduction through higher level language hardware
M-FS-21128 B72-10350 09
- Computer program for natural gas flow through nozzles
LEWIS-11534 B72-10362 09
- FORTRAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane
LEWIS-11237 B72-10405 09
- Variable boundary II heat conduction
LEWIS-10679 B72-10444 09
- Systems effectiveness evaluation program
HQ-10306 B72-10458 09
- Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09
- Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09
- Chemical kinetics computer program for static and flow reactions
LEWIS-11467 B72-10580 04
- Computer programs for the design of liquid-to-liquid jet pumps
LEWIS-11679 B72-10584 09
- Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09
- Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
LEWIS-11635 B72-10586 09
- System/360 Computer Assisted Network Scheduling (CANS) System
GSFC-10909 B72-10599 09
- Significance arithmetic experimental package (SIGPAC)
GSFC-11499 B72-10600 09
- Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06

Interplanetary Trajectories, Encke
Method (ITEM)
GSFC-11576 872-10604 09
Propulsion sizing program
MSC-14016 872-10605 09
Program to produce horizontal
stereographic print maps from Nimbus
HRIR data
GSFC-11397 872-10606 09
Two autowire versions for CDC-3200 and
IBM-360
GSFC-11526 872-10608 09
Source deck compression and update
program (CAPS)
GSFC-11545 872-10619 09
GPEDIT
GSFC-11308 872-10620 09
Method for nonlinear exponential
regression analysis
M-FS-21965 872-10622 09
FORTRAN manpower account program
NPO-11973 872-10623 09
Program to reduce the size of structural
matrices
MSC-17619 872-10625 09
Computer program for afterheat
temperature distribution for mobile nuclear
power plant
LEWIS-11693 872-10634 09
Analytic procedures for determining
dimensional redundancies in electronic
devices
HQ-10709 872-10656 09
Integrated multi-path program analysis
and cost technique (IMPACT)
M-FS-21880 872-10676 09
Propellant feed systems transients
MSC-17848 872-10677 06
Computer program for calculation of
complex chemical equilibrium
compositions
LEWIS-11714 872-10718 09
Chrysler improved numerical differencing
analyzer for third generation computers
CINDA-3G
MSC-11653 872-10721 09
Optimization of fluid line sizes with
pumping power penalty IBM-360 computer
program
MSC-17930 872-10722 06
Analysis of circuits including magnetic
cores (MTRAC)
NPO-11494 872-10724 02
Three bit mass spectral search program
NPO-11960 872-10747 09
Final report on a study of low-density
nozzle flows, with application to microthrust
rockets
HQ-10761 872-10748 06
Effects of nonuniform swash-plate
stiffness on coupled blade-control system
dynamics and stability
LANGLEY-11068 872-10749 06
FORTRAN read package
MSC-14161 872-10750 09
FORTRAN program for generating a
two-dimensional orthogonal mesh between
two arbitrary boundaries
LEWIS-11863 872-10753 09
N-body U and K matrix program
LEWIS-11438 873-10012 09
A comprehensive program for textual
concordances and statistics
JSC-17484 873-10049 09

Computer program for transient response
of structural rings subjected to fragment
impact
LEWIS-11926 873-10064 09
Aerotherm charring materials ablation
computer program
LEWIS-11854 873-10065 09
Computer program for preliminary design
analysis of axial-flow turbines
LEWIS-11815 873-10066 09
Medical Information Management
System (MIMS): An automated hospital
information system
GSFC-11540 873-10073 09
PPUAS--photopeak unfolding and
self-shielding program
NPO-13188 873-10087 09
A general purpose maneuver turns
computer program
NPO-13213 873-10088 09
A linear circuit analysis program with
stiff systems capability
LANGLEY-11184 873-10091 09
Eigenvalue routine by Sturm sequence
method
NPO-11805 873-10114 09
Automated Shell Theory for Rotating
Structures (ASTROS)
M-FS-21970 873-10115 09
Ascent control analysis for S-II derivative
launch vehicles, digital computer program
M-FS-24324 873-10120 09
GREMEX update (Goddard research
engineering management exercise)
GSFC-11512 873-10162 09
Theoretical prediction of interference
loading on aircraft stores: Part II -
Supersonic speeds
LANGLEY-11250 873-10183 06
Theoretical prediction of interference
loading on aircraft stores: Part I - Subsonic
speeds
LANGLEY-11249 873-10184 06
Computer program for the design of
toroidal transformers
LEWIS-11878 873-10214 09
Spectral Analysis Program (SAP)
JSC-14310 873-10227 09
Computer program for calculation of
thermodynamic and transport properties of
complex chemical systems
LEWIS-11997 873-10231 09
A computer program for calculating
design and off-design performance for
turbojet and turbofan engines
LEWIS-12010 873-10232 09
Computer program to determine the
irrotational nozzle admittance
LEWIS-12019 873-10233 09
Method for predicting rotor free-wake
positions and the resulting rotor blade
airloads
LANGLEY-10674 873-10239 06
Computer program to determine roots
of polynomials by ratio of successive
derivatives
LEWIS-11809 873-10244 09
A computer program for calculating
design and off-design performance of two-
and three-spool turbofans with as many
as three nozzles
LEWIS-12011 873-10245 09
Computer program for compressible flow
network analysis
LEWIS-11859 873-10246 09

Computer program to compute buckling
loads of simply supported anisotropic
plates
LEWIS-11961 873-10247 09
Computer program calculates
quasi-one-dimensional flow across face
seals and narrow slots
LEWIS-11996 873-10248 09
Computer program for the prediction of
reorientation flow dynamics
LEWIS-11816 873-10307 09
Program for calculating total-efficiency
of specific-speed characteristics of
centrifugal compressors
LEWIS-12008 873-10309 09
Characteristics of FORTRAN
LANGLEY-11177 873-10322 09
Computer program to determine pressure
distributions and forces on blunt bodies of
revolution
LANGLEY-11197 873-10362 09
Computer program for stress, vibration,
and buckling characteristics of general
shells of revolution
LANGLEY-11369 873-10363 09
Marshall system for aerospace simulation
(MARSYAS)
M-FS-22672 873-10432 09
Dynamic nonlinear analysis of shells of
revolution (DYNASOR II)
JSC-14496 873-10443 09
Frequencies and modes for shells of
revolution (FAMSOR)
JSC-14497 873-10444 09
The static nonlinear analysis of shells
of revolution (SNASOR II)
JSC-14495 873-10445 09
Stiffness and mass matrices for shells
of revolution (SAMMSOR II)
JSC-14494 873-10446 09
Improved method for aerodynamic
analysis of wing-body-tail configurations in
subsonic and supersonic flow
LANGLEY-11305 873-10470 06
Improved method for design of
expansion-chamber mufflers with
application to operational helicopter
LANGLEY-11548 873-10471 03
Stereoscopic computer graphics display
system
M-FS-22322 873-10526 09
Design standards for low-profile flanges
M-FS-22708 874-10033 09
Computer program for spacecraft-booster
separation spring selection, set
composition, and location determination
GSFC-11616 874-10037 09
Graphics shadowing analysis
M-FS-21406 874-10040 09
Marshall information retrieval and display
system (MIRADS)
M-FS-22536 874-10043 09
Generalized curve fit and plotting
(GECAP) program
M-FS-22728 874-10044 09
Computer program for predicting
off-design performance of centrifugal
compressors
LEWIS-12186 874-10067 09
Dynamic transformation method
M-FS-22848 874-10076 06
Computer program for flexible rotor
dynamics analysis
LEWIS-12153 874-10084 09

SUBJECT INDEX

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
 LANGLEY-11175 B74-10091 06

Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
 ARC-10833 B74-10113 09

Computer program for calculating water and steam properties
 LEWIS-12206 B74-10123 09

Data summary and computer program for axial-flow pump rotor performance
 LEWIS-11920 B74-10127 09

Computer program for calculating critical speeds of rotating shafts
 LEWIS-11910 B74-10128 09

Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
 LEWIS-12178 B74-10129 09

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
 LEWIS-12129 B74-10130 09

Space Ultrareliable Modular Computer (SUMC) instruction simulator
 M-FS-22697 B74-10145 09

Separation dynamics of S-II derivative launch vehicle
 M-FS-24325 B74-10151 06

Eigenfunction solution of damped structural systems: DAMP
 NPO-13480 B74-10169 09

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
 LANGLEY-11569 B74-10186 09

Model optimization using statistical estimation
 M-FS-22873 B74-10189 09

Fortran Automatic Code Evaluation System (FACES)
 M-FS-22910 B74-10190 09

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
 LANGLEY-11199 B74-10203 09

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
 LANGLEY-11209 B74-10205 09

Computer program for steamtube curvature analysis: Analytical method
 LANGLEY-11535 B74-10206 09

Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
 LANGLEY-11581 B74-10207 09

Eigenvalue algorithm based on a combined Sturm sequence and inverse iteration technique (EASI)
 NPO-13368 B74-10215 09

Calculation of aerodynamic characteristics of STOL aircraft
 ARC-10882 B74-10221 09

Computerized logic design of digital circuits
 M-FS-22401 B74-10225 09

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
 LANGLEY-11596 B74-10236 09

Computer program for thermodynamic analysis of open-cycle multishaft power system
 LEWIS-12324 B75-10002 09

Computer program to generate engine inlet flow contour maps and distortion parameters
 LEWIS-12247 B75-10005 09

Regenerative cooling design and analysis computer program
 LEWIS-12110 B75-10015 09

Computer programs for calculating potential flow in propulsion system inlets
 LEWIS-12152 B75-10018 09

Computer programs for handling propulsion system noise data
 LEWIS-12285 B75-10019 09

Compressible flow computer program for gas film seals
 LEWIS-12286 B75-10020 09

Computer program for definition of transonic axial-flow compressor blade rows
 LEWIS-12325 B75-10021 09

JPL transient radiation analysis by computer program (JTRAC)
 NPO-13470 B75-10053 09

Prediction of aircraft noise source and estimation of noise-level contours
 ARC-10880 B75-10060 09

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
 M-FS-22838 B75-10093 09

Computer program for numerical analysis of stiffened shells of revolution
 M-FS-23027 B75-10094 09

Interactive graphical computer-aided design system
 M-FS-23157 B75-10096 01

Program for analysis of nonlinear equilibrium and stability (PANES)
 M-FS-23172 B75-10100 09

Computer program for analysis of vectorcardiograms (VECTAN II)
 MSC-14386 B75-10106 09

RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
 LEWIS-12388 B75-10186 09

Computer program for calculating water and steam properties
 LEWIS-12519 B75-10187 09

Computer program for calculating thermodynamic and transport properties of fluids
 LEWIS-12520 B75-10188 09

Executive computer program for linking independent computer programs: ODINEX
 LANGLEY-11324 B75-10194 09

Handbook for estimating toxic fuel hazards
 M-FS-21114 B75-10198 04

Marshall vehicle-engineering simulation system (MARVES)
 M-FS-21701 B75-10199 06

Automated statistical analysis program (ASAP)
 LANGLEY-11125 B75-10217 02

Multiple-compartment venting program
 MSC-19428 B75-10234 06

Multispectral data analysis: LARSYS III
 MSC-14823 B75-10235 03

Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
 MSC-14866 B75-10236 03

FOURIER TRANSFORMATION

Computer program for the attenuation of high bypass turbofan engine noise
 LEWIS-12179 B75-10242 09

Improved axisymmetric potential flow computer program
 LEWIS-12387 B75-10243 09

Optical design computer program: LENS II
 GSFC-11951 B75-10250 03

Computer integration of hydrodynamics equations for heat pipes
 GSFC-12009 B75-10252 09

Improved general-purpose namelist processor
 LANGLEY-11834 B75-10263 09

Reliability computation from reliability block diagrams
 NPO-13304 B75-10276 07

General optics evaluation program (GENOPTICS)
 GSFC-12038 B75-10294 09

Small interactive image processing system (SMIPS)
 GSFC-12079 B75-10295 09

Static aeroelastic program
 LANGLEY-11602 B75-10298 06

The Langley Research Center NASA/PERT TIME III
 LANGLEY-11887 B75-10302 09

FOSTER THEORY

Multi-frequency resonant antenna
 HQ-10215 B70-10098 02

FOUNDATIONS

Critical speed analysis of rotors
 LEWIS-11061 B70-10288 06

FOURIER ANALYSIS

Fourier waveform analyzer
 GSFC-11747 B75-10070 01

FOURIER SERIES

High efficiency telemetry method
 NPO-10388 B71-10371 02

FOURIER TRANSFORMATION

High-resolution spectral analysis
 NPO-10748 B70-10039 01

Stellar spectrum classifier
 MSC-13450 B70-10319 03

Holographic photography of high velocity particles
 ERC-10318 B70-10371 03

Interferometer for measurement of optical polarization
 NPO-11239 B70-10405 03

Tracking antenna deformation program
 GSFC-11191 B71-10017 09

Multi-dimensional real Fourier transform
 NPO-11648 B71-10133 09

Multispectral infrared imaging interferometer
 MSC-12404 B71-10325 02

Acoustic spectral analysis and testing techniques
 NPO-11554 B72-10341 03

Compression and R-wave detection of ECG/VCG data
 MSC-14126 B72-10391 05

Computer-controlled vibration testing
 NPO-11612 B73-10138 02

Design and fabrication of an experimental image forming light modulator
 M-FS-22547 B73-10182 03

Continuous Fourier transform system
 ARC-10466 B74-10170 02

Fast Fourier transformation computer using fast counters
 NPO-13110 B75-10175 02

FRACTIONATION

Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
Phosphorus in land-water systems
AEC-10049 B72-10429 05

FRACTIONS

A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01

FRACTOGRAPHY

Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04

FRACTURE MECHANICS

Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04
New understanding of fiber composite materials
NPO-11605 B71-10161 04
Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06
Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
Fiber composite materials: A survey of fiber matrix interface mechanics
LEWIS-11924 B73-10007 04
Optimization of structures on the basis of fracture mechanics and reliability criteria
NPO-11645 B73-10276 06
Design Guide for glass fiber reinforced metal pressure vessel
LEWIS-12042 B73-10311 08
Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 B74-10222 04
Design criteria monograph for metal tanks and tank components
LEWIS-12434 B75-10013 06

FRACTURE STRENGTH

The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06
Probability of stress-corrosion fracture under random loading
NPO-13113 B73-10453 04
Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04
Fracture toughness testing data: A technology survey and bibliography
LEWIS-12503 B75-10139 03
Influence of heat treatment on mechanical properties of 300M steel
MSC-14792 B75-10271 04

FRACTURES (MATERIALS)

Accurate reassembly of small broken test specimens
M-FS-16730 B70-10455 07
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
Failure in glass
AEC-10088 B72-10364 04

FRACTURING

An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01
Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
Weight simulator
ARC-10100 B72-10046 05
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07

FRAGMENTATION

Economical technique for fragmentation testing
ARC-10792 B74-10052 04

FRAMES

Simple two-speed tape transport drive
GSFC-10981 B71-10409 06
Thermally stable structural framework
ARC-10612 B72-10252 08
Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03
Expandable space frames
ERC-10365 B74-10252 06

FRAUNHOFER LINES

The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03

FREE FALL

Controlled release of free-falling test models
NPO-11314 B70-10077 07
Multibody Interplanetary Swingby Trajectories / MIST-1/
M-FS-15081 B70-10603 09

FREE FLOW

Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
A stagnation pressure probe for use in supersonic flow
LANGLEY-11139 B72-10543 06

FREE MOLECULAR FLOW

A low-altitude satellite interaction study
GSFC-11384 B71-10499 09

FREE RADICALS

Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 B70-10453 04
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04

FREEZING

Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05
Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05
Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
Restartable heat pipe
ARC-10198 B72-10188 03

Fluid insulation to prevent ice formation in heat exchangers
LEWIS-11959 B73-10028 06

Preservation of flavor in freeze dried green beans
JSC-14149 B73-10092 05
Automatic device for shell freezing of liquids
GSFC-11737 B73-10253 04

FREON

A vapor barrier for cold testing printed circuit cards
M-FS-15115 B70-10172 01
Improved linings for integrating spheres
MSC-12237 B70-10413 03
Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04
Refrigerated cutting tools improve machining of superalloys
LANGLEY-10488 B71-10076 08
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07
Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
Leaching of nitroso rubber material removes uncured polymer
MSC-17185 B72-10449 04
Freon 21 bearing lubrication and coolant system
HQ-10302 B72-10651 06

FREQUENCIES

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Digital frequency discriminator
M-FS-14322 B70-10010 01
Active resistance capacitance filter design
ARC-10020 B70-10034 01
Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
Dual-frequency feed-horn antenna
GSFC-10820 B71-10056 02
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
New filter technique improves home television reception
MSC-13729 B71-10141 02
A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02
A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Piezoelectric transducer mosaic
ARC-10509 B72-10014 01
A study of the power spectral density of an FM signal
M-FS-21070 B72-10361 02

Frequency-wavelength calculator with table of dielectric properties
GSFC-11200 B72-10472 03
High-efficiency multifrequency feed
GSFC-11909 B74-10288 02

FREQUENCY ANALYZERS

Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 B71-10120 03
Laser vibration analyzer
XAC-01670 B71-10249 03
A real-time statistical time-series analyzer
MSC-12428 B71-10276 02
Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01

FREQUENCY CONTROL

Portable vibration exciter
KSC-10069 B70-10339 07
Beam squint correction for a diplex, retrodirective phased array
GSFC-11023 B71-10444 02
Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
Microresonator for damping flow oscillations
M-FS-18401 B72-10105 06
Broadband RF-distribution amplifier
NPO-11401 B72-10245 01
Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03
Digital notch filter
KSC-10182 B73-10112 02
Frequency control circuit for all-digital phase-lock loops
NPO-11936 B73-10351 01

FREQUENCY CONVERTERS

Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
A real-time statistical time-series analyzer
MSC-12428 B71-10276 02
Frequency-to-amplitude converter: A concept
MSC-12395 B72-10729 01
RF to digital converter
JSC-14419 B73-10306 02
Synchronized frequency transposer
GSFC-11763 B74-10256 01

FREQUENCY DISTRIBUTION

Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Program for standard statistical distributions
M-FS-21466 B72-10602 09

FREQUENCY DIVIDERS

Externally programmed variable timer
M-FS-20776 B71-10437 04
Low phase-noise digital frequency divider
NPO-11569 B73-10135 01

FREQUENCY DIVISION MULTIPLEXING

Synchronous ten-megabit biphasic detector
M-FS-22546 B73-10323 02

FREQUENCY MEASUREMENT

Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06
Nonequal iteration directional filters permit selective clearance of ripples in passband circuits
ERC-10313 B70-10385 01
Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02
Frame modal analysis
MSC-17562 B71-10414 09
Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02
Variable-volume atomic storage vessel for hydrogen masers
GSFC-11895 B75-10248 03

FREQUENCY MODULATION

Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Multi-frequency resonant antenna
HQ-10215 B70-10098 02
Graphical method to predict the dynamic response of FM receivers
KSC-10111 B70-10119 01
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
Directional coupler for optical waveguides
ERC-10094 B70-10381 03
Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
Intruder detection system
ARC-10097 B70-10638 02
Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
Tone-activated, remote, alert communication system
NPO-11132 B71-10307 02
Improved audio reproduction system
ARC-10404 B72-10059 01
Narrowband, crystal-controlled biomedical telemetry system
ARC-10708 B72-10255 01
An ingestible temperature-transmitter
ARC-10583 B72-10275 01
A study of the power spectral density of an FM signal
M-FS-21070 B72-10361 02
Laser frequency modulation with electron plasma
AEC-10079 B72-10373 03
Diode-quad bridge for reactive transducers and FM discriminators
ARC-10364 B72-10691 01
Pre-emphasis determination for an S-band constant bandwidth FM/FM station
M-FS-22135 B73-10170 02

Junction range finder
KSC-10108 B73-10191 02
High-sensitivity receiver for CO₂ laser communications
GSFC-11455 B73-10223 02
Spectral Analysis Program (SAP)
JSC-14310 B73-10227 09
RF to digital converter
JSC-14419 B73-10306 02
Carrier suppression device for a heterodyne gas analyzer
ARC-10785 B73-10381 03

FREQUENCY MULTIPLIERS

Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 B70-10457 02
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01

FREQUENCY RANGES

A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01
Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Design procedure for improved active filters
M-FS-20445 B70-10238 02
A self-tuning filter
ARC-10264 B70-10337 01
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01
Selecting digital filters
M-FS-20933 B72-10156 01
Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06

FREQUENCY RESPONSE

High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01
Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03
Artificial-feedback system
GSFC-10324 B70-10421 02
A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
Technique for lowering the noise figure in RF amplifiers
HQ-10435 B70-10650 01

Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
Selecting digital filters
M-FS-20933 B72-10156 01
Low frequency sinusoidal pressure generator
LEWIS-11465 B72-10477 01
Universal dc signal conditioner
MSC-17526 B72-10510 02
Computer method for identification of boiler transfer functions
LEWIS-11808 B72-10582 09
Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06

FREQUENCY SCANNING

Automatic carrier acquisition system for phase-lock-loop receivers
NPO-11628 B73-10343 02

FREQUENCY SHIFT

Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05
Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03
Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
Double phase-lock loop with rapid transient response - A concept
GSFC-10864 B71-10349 01
Real time optical figure sensor
M-FS-22123 B73-10169 02
Frequency shifting with a solid-state switching capacitor
HQ-10812 B73-10259 01
Laser velocimeter with transverse and on-axis sensitivity
ARC-10642 B73-10262 03
Laser velocimeter for simultaneous two-dimensional velocity measurements
ARC-10637 B73-10267 02
Three-dimensional gas turbulence measurement with a laser-Doppler velocimeter system
M-FS-22713 B73-10371 04
Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 B73-10417 03
Motion compensator for holographic motion picture camera
M-FS-22517 B73-10434 03

FREQUENCY SHIFT KEYING

Continuous-phase frequency-shift-keyed generator
LANGLEY-11638 B75-10218 02

FREQUENCY STABILITY

Precise audio-frequency markers for nuclear magnetic resonance spectra
NPO-11147 B70-10086 02
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
Wein bridge oscillator circuit
MSC-13686 B71-10089 01
Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01
Crystal-controlled multivibrator
NPO-11627 B72-10155 01

Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02
A technique to eliminate false lock in PCM demodulation
JSC-12494 B73-10106 02
Phase shift keyed, pulse code modulated signal synchronizer
JSC-12462 B73-10107 02
Stabilizing a gaseous optical laser
XGS-03644 B73-10517 03
Continuous-phase frequency-shift-keyed generator
LANGLEY-11638 B75-10218 02

FREQUENCY STANDARDS

Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 B70-10581 03
Time-synchronized VLF phase-tracking receiver
NPO-11600 B73-10275 02
Stabilizing a gaseous optical laser
XGS-03644 B73-10517 03

FREQUENCY SYNCHRONIZATION

System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
A technique to eliminate false lock in PCM demodulation
JSC-12494 B73-10106 02
Phase shift keyed, pulse code modulated signal synchronizer
JSC-12462 B73-10107 02

FREQUENCY SYNTHESIZERS

Minicomputer-controlled frequency generator
NPO-11962 B74-10163 02

FRESNEL DIFFRACTION

A low cost "Air Mass 2" solar simulator
LEWIS-12266 B74-10086 02

FRESNEL REFLECTORS

Economical solar-heating or cooling system with new solar-energy concentrators
NPO-13497 B75-10182 03

FRESNEL REGION

General technique for measurement of refractive index variations
HQ-10359 B70-10064 01

FRETTING

Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04

FRICTION

Improved mechanical remote control assembly - Concept
M-FS-16249 B70-10144 07
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 B70-10577 07
Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08

Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Improved orthopedic arm joint
M-FS-21611 B71-10485 05
Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
Joining precipitation-hardened nickel-base alloys by friction welding
LEWIS-11514 B72-10288 08
Latch mechanism
M-FS-21606 B72-10457 08

FRICTION FACTOR

Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07
Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07

FRICTION MEASUREMENT

Scanning-electron-microscope used in real-time study of friction and wear
LEWIS-12448 B75-10064 06
Apparatus for measuring static coefficient of friction under compressive loads
GSFC-11893 B75-10214 06

FRICTION REDUCTION

Self-lubricating fluorine shaft seal material
HQ-10112 B70-10222 04
A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 B70-10287 07
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
Low-friction ball-and-socket
NPO-11348 B72-10081 08
New full-complement ball bearing lubrication technique
MSC-13850 B72-10174 07
Ball bearing protector
M-FS-21612 B72-10322 07
Stem clutch for motor driven valve
LRL-10032 B72-10345 07
Polyimide bonded graphite fluoride: A new long life solid lubricant coating
LEWIS-11864 B72-10628 04
Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06
Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

FROST

A vapor barrier for cold testing printed circuit cards
M-FS-15115 B70-10172 01
Frost as an insulator
NUC-11039 B70-10593 03

FROZEN FOODS

The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05

FRUITS

Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05

FUEL CAPSULES

Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03

FUEL CELLS

Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01

Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04

Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
MSC-13174 B70-10277 01

Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02

Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03

Improved operation of rechargeable oxygen electrodes
LEWIS-11619 B72-10479 01

Propulsion sizing program
MSC-14016 B72-10605 09

Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06

A methanol/air fuel cell system
M-FS-22541 B73-10472 07

An electrochemical engine
M-FS-22542 B73-10473 07

Vapor-deposited platinum as a fuel-cell catalyst
M-FS-21317 B73-10475 04

Fuel-cell heat and mass plate
M-FS-21318 B73-10489 07

Fiber-modified polyurethane foam for ballistic protection
ARC-10714 B75-10062 04

Heat-operated cryogenic electrical generator
NPO-13303 B75-10116 03

Using permeable membranes to produce hydrogen and oxygen from water
MSC-12600 B75-10314 04

Acid/alkali bromide secondary battery
NPO-13237 B75-10324 01

Reconstituted asbestos matrix for fuel cells
MSC-12568 B75-10339 04

FUEL COMBUSTION

Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04

Fluidized-bed combustion reduces atmospheric pollutants
AEC-10085 B72-10431 04

FUEL CONSUMPTION

Optimized braking of landing vehicles with atmospheric drag
NPO-11402 B72-10084 06

Fluidic systems may improve combustion in automotive engines
ARC-10582 B72-10250 06

Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07

Gas generators produce hydrogen-rich fuel
NPO-13342 B75-10203 06

Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06

Steam automobile analysis
M-FS-23188 B75-10229 03

Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
LEWIS-12554 B75-10290 04

FUEL CONTROL

Solenoid valve performance characteristics studied
M-FS-12458 B70-10066 07

Precision control system for engine fuel
NPO-12017 B70-10244 07

Pulse width-pulse rate modulator
ARC-10025 B71-10497 01

Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09

FUEL FLOW

Precision control system for engine fuel
NPO-12017 B70-10244 07

Swirl-can combustor segment
LEWIS-11082 B70-10322 07

Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09

Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06

FUEL INJECTION

Precision control system for engine fuel
NPO-12017 B70-10244 07

Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07

Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07

Main tank injection pressurization program
LEWIS-11368 B72-10069 09

Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07

Injector has no backslash
NPO-13208 B73-10461 07

Improved air atomizing splash-groove fuel injector reduces pollutant emissions from turbojet engines
LEWIS-12417 B75-10190 06

FUEL OILS

Floating baffle to improve efficiency of liquid transfer from tanks
KSC-10639 B73-10190 07

FUEL PUMPS

Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07

FUEL SPRAYS

Injector has no backslash
NPO-13208 B73-10461 07

FUEL SYSTEMS

Precision control system for engine fuel
NPO-12017 B70-10244 07

Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06

Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04

Fill and vent quick disconnect
M-FS-21822 B72-10645 07

Propellant feed systems transients
MSC-17848 B72-10677 06

Design criteria monograph for metal tanks and tank components
LEWIS-12434 B75-10013 06

Cryogenic line insulation made from prefabricated polyurethane shells
MSC-19523 B75-10110 06

Gas generators produce hydrogen-rich fuel
NPO-13342 B75-10203 06

Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06

FUEL TANK PRESSURIZATION

A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01

Main tank injection pressurization program
LEWIS-11368 B72-10069 09

Fluidic pressure regulators
ARC-10474 B72-10162 06

Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03

Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03

Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
LEWIS-11574 B72-10330 06

Design criteria monograph for metal tanks and tank components
LEWIS-12434 B75-10013 06

FUEL TANKS

Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03

Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03

Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04

Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06

Filament winding technique produces strong lightweight oxygen tanks
M-FS-22470 B73-10082 08

FUEL VALVES

Precision control system for engine fuel
NPO-12017 B70-10244 07

Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07

Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06

Hermetic isolation valves
ARC-10505 B72-10013 06

Zero-leakage valves
ARC-10506 B72-10024 06

- Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06

FUEL-AIR RATIO

- Swirl-can combustor segment
LEWIS-11082 B70-10322 07

FUELS

- An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Handbook for estimating toxic fuel hazards
M-FS-21114 B75-10198 04

FUNCTION GENERATORS

- Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Digital-voltage curve generator
NPO-11104 B70-10590 02
Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09
Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
Logical-function generator
XLA-05099 B73-10360 09
Logarithmic-function generator
ERC-10267 B74-10285 02

FUNCTIONAL INTEGRATION

- Study of nondestructive techniques for redundancy verification
KSC-10661 B71-10258 02

FUNCTIONS (MATHEMATICS)

- Polynomial-smoothing and derivative-estimating formulas for functions of one or two independent variables
NPO-11256 B70-10078 09
Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09
Hybrid computer techniques for solving partial differential equations
M-FS-21386 B71-10424 09
Optimization technique for problems with an inequality constraint
ARC-10522 B72-10222 09
Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09

FUNGICIDES

- Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
Polyelectrolytes with high charge density
NPO-11918 B74-10159 04

FURNACES

- Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04

- Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08

- Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01

- Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03

- Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01

- Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04

- Improved fire-resistant coatings
GSFC-10072 B71-10198 04

- Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08

- Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04

- Simple, reproducible methods for thermal shock testing of brittle materials
NUC-11020 B72-10228 06

- High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

FUSELAGES

- Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09

FUSES

- Two terminal current limiter
NPO-11350 B70-10232 01
New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
Self-healing fuse
LEWIS-11964 B74-10004 02

FUSES (ORDNANCE)

- Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 B70-10335 01

FUSIBILITY

- Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01

FUSION (MELTING)

- High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08
Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08

FUSION WELDING

- Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Resistance spot welding of dispersion-strengthened nickel alloys
LEWIS-12075 B73-10315 04

G**GADOLINIUM**

- Coercive force of thin magnetic films
NPO-10750 B70-10221 03
Improved intensifying screen reduces X-ray exposure
AEC-10090 B72-10232 03
Boron-10 loaded inorganic shielding material
M-FS-22280 B72-10740 04

GALACTIC RADIATION

- A study of radiation environment in space and its biological effects
HQ-10798 B72-10662 03

GALLIUM ANTIMONIDES

- P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01

GALLIUM ARSENIDES

- Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
Solid state variable time delay
ERC-10032 B70-10492 01
Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 B71-10357 03
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
A voltage-tunable three-terminal Gunn device
HQ-10783 B72-10518 01
GaAs transistors formed by Be or Mg ion implantation
LANGLEY-11204 B73-10442 01
High-performance Schottky diodes endure high temperatures
M-FS-23184 B75-10101 01
Schottky barrier solar cell promises improved efficiency
NPO-13482 B75-10125 03
Ellipsometer measurements of epitaxial GaAs layers: A concept
M-FS-23238 B75-10230 01

GALLIUM COMPOUNDS

- Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03
Vapor phase growth of group 3, 4, and 5 compounds by HCl transport of elements
LANGLEY-11144 B73-10056 04

GALLIUM PHOSPHIDES

- Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
High temperature gallium phosphide rectifiers
LEWIS-11804 B72-10673 01

GALVANOMETERS

- Low cost instrumentation amplifier
LEWIS-12222 B74-10015 01

GAMMA FUNCTION

- Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02

GAMMA RAYS

- Neutron-image intensifier
ARG-10249 B70-10240 03

- The effects of nuclear power generators upon electronic instrumentation
NPO-11217 870-10272 03
- Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
NUC-10227 870-10356 03
- A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 870-10648 01
- Circuit modification aids in atomic particle discrimination
LEWIS-11155 870-10689 01
- Scintillation detector for carbon-14
ARC-10378 871-10144 03
- Computer program optimizes design of nuclear radiation shields
LEWIS-10998 871-10400 09
- A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 871-10439 02
- Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 871-10490 09
- A Compton scatter attenuation gamma ray spectrometer
M-FS-21441 872-10487 03
- Fast response densitometer for measuring liquid density
M-FS-14478 872-10664 02
- Irradiation of MOS-FET devices to provide desired logic functions
GSFC-11061 872-10719 01
- Reductive cleavage of the peptide bond
LRL-10026 873-10194 04
- Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
M-FS-22678 873-10518 06
- GAPS**
Modified faceplate assembly for stud-welding gun
M-FS-16725 870-10044 08
- GARMENTS**
Improved heat-resistant garments
MSC-12109 870-10544 08
- Conductive elastomeric extensometer
M-FS-21049 871-10032 01
- Improved temperature control of liquid cooling garments
MSC-13917 872-10281 05
- GARNETS**
Coercive force of thin magnetic films
NPO-10750 870-10221 03
- Fabrication of magnetic bubble memory overlay
M-FS-22377 873-10096 01
- GAS ANALYSIS**
Mass spectrometer detects high molecular weight components
HQ-10477 870-10057 01
- Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn 870-10366 04
- Improved photoionization mass spectrometer
LANGLEY-10180 870-10402 04
- Fast peak selector for mass spectrometer
LANGLEY-10268 871-10009 04
- Computer-controlled mass spectrometer for on-line gas analysis
NPO-11427 871-10191 03
- Analysis of low resolution mass spectra
GSFC-11279 871-10267 09
- Metabolic breath analyzer
M-FS-21415 871-10466 05
- Miniature carbon dioxide sensor
MSC-13332 871-10536 03
- Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 872-10249 04
- An improved gas extraction furnace
MSC-14138 872-10544 04
- Unified life detection system: A concept
ARC-10769 873-10377 05
- Carrier suppression device for a heterodyne gas analyzer
ARC-10785 873-10381 03
- Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 874-10085 04
- A nondispersive infrared analyzer
ARC-10631 875-10082 03
- Dynamic delta method for trace gas analysis
LANGLEY-11800 875-10159 04
- Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 875-10185 03
- GAS BEARINGS**
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 870-10389 07
- Improved transducer for squeeze-film bearings
M-FS-20826 871-10140 07
- High speed, self-acting, face-contact shaft seal has low leakage and very low wear
LEWIS-11598 872-10114 07
- Sputter etching of hemispherical bearings
HQ-10712 872-10534 08
- Poppet valve tester
LEWIS-11655 873-10415 07
- Linear kinematic air bearing
NPO-13151 873-10456 06
- Self-leveling load table
M-FS-22039 874-10144 06
- Gas bearing operates in vacuum
NPO-13425 875-10052 06
- GAS CHROMATOGRAPHY**
An electrothermally actuated micro valve
NPO-10730 870-10171 07
- Economic gas chromatograph system for subambient pressure gas sampling
M-FS-16298 870-10220 02
- Combining micro dry column chromatography and mass spectrometry
NPO-11240 870-10231 03
- Gas chromatograph sample-transfer valve
ARC-10427 871-10474 04
- Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 872-10207 03
- Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 872-10244 03
- Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 872-10249 04
- Microminiature gas chromatographic column
ARC-10594 872-10306 04
- Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 872-10451 04
- Gas-flow restrictor
NPO-10117 872-10703 03
- Transonic divider for gas chromatograph effluents
NPO-11479 872-10706 03
- Magnetic latching valve
NPO-11790 873-10026 06
- Calibration of dissolved oxygen standard for analysis with methylene blue
M-FS-22353 873-10147 04
- Dynamic technique for measuring adsorption in a gas chromatograph
JSC-14083 873-10339 04
- Gas chromatography of volatile organic compounds
JSC-14428 873-10406 04
- Soil moisture by extraction and gas chromatography
ARC-10748 873-10503 04
- Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 875-10152 02
- GAS COMPOSITION**
Anemometer calibrator
M-FS-21424 871-10519 03
- An absorption spectrum amplifier for determining gas composition
HQ-10752 872-10524 03
- An improved gas extraction furnace
MSC-14138 872-10544 04
- GAS COOLING**
Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 871-10043 01
- Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 871-10219 07
- Freon 21 bearing lubrication and coolant system
HQ-10302 872-10651 06
- GAS DENSITY**
Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 870-10333 04
- Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 871-10398 09
- Laser device provides accurate reference to true gravitational vertical
ARC-10444 871-10479 07
- Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 872-10209 03
- Accurate measurement of gas volumes by liquid displacement
ARC-10723 872-10699 03
- GAS DETECTORS**
Colorimetric detection of ethylene glycol vapor
MSC-13222 870-10031 03
- Scintillation detector for carbon-14
ARC-10378 871-10144 03
- Gas leak-detection system
NPO-11405 872-10087 03
- Laboratory leak tester provides high sensitivity
AEC-10042 872-10240 03
- Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 872-10249 04
- Helium leak measurements using CO₂ as a carrier
M-FS-21742 872-10354 03

Detection of nitric oxide pollution
ARC-10709 B73-10018 03
Extendible probe for atmosphere
sampling
ARC-10829 B74-10054 03
Modulated hydrogen-ion flame detector:
A concept
ARC-10322 B74-10071 03
Probe for measuring turbulent real-time
shear-stress waves
ARC-10755 B74-10072 03

GAS DISCHARGE TUBES

Electro-optical time marker for
high-speed cameras
KSC-10294 B70-10229 01
Improved ultraviolet resonance lamp
ARC-10030 B70-10237 01
Coaxial anode improves sensitivity of gas
radiation counters
GSFC-11492 B74-10229 03
Apparatus for study of plasmas at
elevated temperatures
ARC-10958 B75-10285 03

GAS DISCHARGES

Improved magnetron cold-cathode ion
source
LANGLEY-10387 B70-10023 02
Regulated-current dc power supply for
gaseous-discharge lamps
GSFC-10293 B70-10239 02
Properties of ionization breakdown of air
at microwave frequencies and optimization
of component dimensions for maximum
microwave power
M-FS-21924 B72-10316 01
Ion plating seals microcracks or porous
metal components
LEWIS-11657 B72-10397 04
High-intensity source of extreme
ultraviolet
HQ-10754 B72-10528 03

GAS DYNAMICS

A program for computing shock-tube gas
dynamic properties
NPO-11068 B70-10133 09
Ultrasonic propagation in gases at high
temperatures
HQ-10498 B70-10137 03
Analysis of surface ablation of
noncharring materials
ARC-10223 B70-10615 09
A study of high frequency nonlinear
combustion instability in baffled annular
liquid propellant rocket motors
NPO-11800 B71-10532 09
Water cavity degasser for electrolysis
cells
ARC-10244 B72-10246 03
Analyses of unsteady entropic-flow
processes
M-FS-24475 B73-10482 03

GAS EVOLUTION

Miniature fuel cells relieve gas pressure
in sealed batteries
XGS-11370 B71-10064 02
Devolatilization of polymer resins
GSFC-11358 B72-10280 04

GAS EXPLOSIONS

An explosion-proof battery case
MSC-12335 B70-10304 01
Lightweight S-band helix antenna
KSC-10392 B70-10538 02
An unconfined, large-volume
hydrogen/air explosion
NUC-11000 B71-10041 03

GAS FLOW

Gas flowmeter
M-FS-20663 B70-10050 07
A stabilized low-frequency
alternating-current electric arc
LEWIS-10442 B70-10065 01
Fluid mixing technique increases the gain
and output power of carbon dioxide laser
systems
HQ-10389 B70-10108 03
Control of equilibrium
pressure-temperature conditions in
cryogenic storage
M-FS-18115 B70-10122 03
Design and development criteria for
metal bellows
M-FS-20640 B70-10125 05
Short-duration, transonic flow,
variable-porosity test section
M-FS-20509 B70-10256 03
Film breakers prevent migration of
aqueous potassium hydroxide in fuel cells
MSC-13174 B70-10277 01
Computer program for analysis of flow
across a gas turbine seal
LEWIS-10975 B70-10317 09
Low pressure arc electrode
ARC-10012 B70-10329 01
Experimental investigation and analysis
of two sources of nozzle-thrust
misalignment
NPO-11355 B70-10406 06
Elimination of gases and contamination
from water
KSC-10502 B70-10456 05
Very low velocity flow sensor uses fluidic
techniques
ERC-10404 B70-10461 03
Visible light electroluminescent diodes of
indium-gallium phosphide
ERC-10303 B70-10474 01
Technique for analyzing human
respiratory process
MSC-13436 B70-10528 05
High-temperature rapid-response
thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
High amplitude sinusoidal pressure
generator
LEWIS-11241 B70-10635 07
Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
Compact electric heater
LEWIS-11172 B70-10677 03
Low leak rate poppet-and-seat check
valve
MSC-13587 B70-10688 07
Low temperature fluid blender
LEWIS-11206 B71-10058 04
Miniature fuel cells relieve gas pressure
in sealed batteries
XGS-11370 B71-10064 02
Submersed sensing electrode used in
fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
Predicting vibrational failure of flexible
ducting
M-FS-16750 B71-10150 06
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05
Steady temperature and density
distributions in a gas containing heat
sources
LEWIS-10905 B71-10398 09
Low cost, logarithmic mass flow
computer
LEWIS-11001 B71-10407 06

Proportional pulsed pilot valve
ARC-10228 B71-10468 07
Pressure sensitive gas flow meter
ARC-10219 B72-10049 06
Dynamic valve to supply constant total
thrust to two orifice jets
ARC-10239 B72-10120 07
Micro regulating ball valve
ARC-10295 B72-10121 06
Positive fast sealing union connections
LEWIS-11290 B72-10133 06
Advances in induction-heated plasma
torch technology
LEWIS-11354 B72-10151 03
Closed-cycle power supply for fluidic
control systems
ARC-10480 B72-10163 06
Vortex servovalve for fluidic or electrical
input
ARC-10155 B72-10173 07
Miniature high pressure regulator
ARC-10428 B72-10211 07
Continuous monitor for gas ratios in a
mixture
LEWIS-11095 B72-10229 05
Flow equation for porous plug and
capillary tube flow restrictors
GSFC-11387 B72-10289 06
Optical enhancement of sensitivity in
laser Doppler velocity systems
ARC-10653 B72-10310 03
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
Controlled flow assembly
M-FS-21716 B72-10404 07
Regenerable metallic oxide systems for
removal of carbon dioxide: A concept
ARC-10570 B72-10420 04
Investigations of a turbulent jet in a
crossflow
LEWIS-11680 B72-10437 06
Combination pressure regulator and
safety valve: A Concept
MSC-14088 B72-10446 06
Integrated monopropellant thruster
NPO-12004 B72-10502 06
Probe measures gas and liquid mass flux
in high mass flow ratio two-phase flows
LEWIS-11270 B72-10546 06
Hydrophobic liquid/gas separator for
heat pipes
ARC-10656 B72-10549 03
Chemical kinetics computer program for
static and flow reactions
LEWIS-11467 B72-10580 04
Accurate measurement of gas volumes
by liquid displacement
ARC-10723 B72-10699 03
Gas-flow restrictor
NPO-10117 B72-10703 03
Transonic divider for gas chromatograph
effluents
NPO-11479 B72-10706 03
Particle-fluid interactions for flow
measurements
M-FS-21727 B73-10117 06
Ion-tracer anemometer
M-FS-21399 B73-10151 04
Mass flow controller for gaseous
propellants
JSC-14221 B73-10207 06
Three-dimensional gas turbulence
measurement with a laser-Doppler
velocimeter system
M-FS-22713 B73-10371 04

- High-speed spectrograph for shock tube studies
ARC-10772 B73-10501 03
Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
Shutoff and throttling valve
NPO-11951 B74-10105 07
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
Compressible flow computer program for gas film seals
LEWIS-12286 B75-10020 09
Electrical gas heater with large flow range capability
LEWIS-12361 B75-10024 03
Improved chemical vapor-deposition reactor
NPO-13650 B75-10212 08
Multiple-compartment venting program
MSC-19428 B75-10234 06
- GAS GENERATORS**
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
Smoke generator
LANGLEY-11433 B73-10414 06
Design criteria monograph for liquid propellant gas generators
LEWIS-12139 B74-10008 07
Gas generators produce hydrogen-rich fuel
NPO-13342 B75-10203 06
Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06
Using permeable membranes to produce hydrogen and oxygen from water
MSC-12600 B75-10314 04
- GAS GUNS**
Collapsible pistons for light-gas guns
JSC-13789 B73-10413 07
- GAS HEATING**
Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
HQ-10389 B70-10108 03
Estimating carbon monoxide exposure
MSC-17211 B71-10319 04
Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03
Electrical gas heater with large flow range capability
LEWIS-12361 B75-10024 03
- GAS INJECTION**
Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
- Remote control flare stack igniter for combustible gases
M-FS-21675 B72-10352 07
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
- GAS IONIZATION**
Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01
An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03
Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
M-FS-21924 B72-10316 01
Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01
Design method for minimizing RF voltage breakdown
NPO-13408 B73-10520 01
Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
Electrostatically controlled heat shutter
NPO-11942 B74-10161 03
- GAS JETS**
Novel wave generator adaptable to indoor surfboarding
LEWIS-11096 B70-10563 03
Separation of two bodies in space
NPO-10663 B70-10625 09
Wide angle solar sensor
NPO-11341 B72-10080 01
Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07
- GAS LASERS**
Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
HQ-10389 B70-10108 03
Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
Laser vibration analyzer
XAC-01670 B71-10249 03
Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02
Stabilizing a gaseous optical laser
XGS-03644 B73-10517 03
Laser using lead chloride vapor
NPO-13615 B75-10128 03
Industrial laser welding: An evaluation
M-FS-23237 B75-10267 08
- GAS LUBRICANTS**
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
- GAS MASERS**
Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01
- A method of eliminating hydrogen maser wall shift
HQ-10663 B72-10670 03
Variable-volume atomic storage vessel for hydrogen masers
GSFC-11895 B75-10248 03
- GAS MIXTURES**
Quantitative conversion of water to carbon dioxide
NPO-10731 B70-10013 04
Atmospheric composition affects heat- and mass-transfer processes
HQ-10271 B70-10094 04
A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09
Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04
Fast peak selector for mass spectrometer
LANGLEY-10268 B71-10009 04
Scintillation detector for carbon-14
ARC-10378 B71-10144 03
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Comparison of catalyst activity
ARC-10493 B72-10201 04
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
Water cavity degasser for electrolysis cells
ARC-10244 B72-10246 03
Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
Chemical kinetics computer program for static and flow reactions
LEWIS-11467 B72-10580 04
Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03
Reduction of noise in gyro outputs
NPO-11603 B72-10743 06
Fluidic device for measuring constituent masses of a flowing binary gas mixture
LEWIS-11995 B73-10230 06
- GAS PIPES**
Positive fast sealing union connections
LEWIS-11290 B72-10133 06
- GAS POCKETS**
Novel valve for reciprocating compressors - Concept
MSC-15060 B70-10160 07
- GAS PRESSURE**
Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03
Self-sealing propellant-actuated device eliminates atmosphere contamination
NPO-11013 B70-10248 07
Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 B70-10333 04
Control system for an artificial heart
LEWIS-11057 B70-10469 05
Safe suspension of specimens or clusters during dynamic testing - A concept
M-FS-15110 B70-10559 07
Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04

Improved method for cladding the inside of metal tubes

LEWIS-11174 B70-10723 08

Miniature fuel cells relieve gas pressure in sealed batteries

XGS-11370 B71-10064 02

Improved transducer for squeeze-film bearings

M-FS-20826 B71-10140 07

Computer-controlled mass spectrometer for on-line gas analysis

NPO-11427 B71-10191 03

Inertia diaphragm pressure transducer

XAC-2981 B71-10200 05

Pressure transducer with four-decade dynamic range

KSC-10384 B71-10323 01

Improved plasma accelerator

ARC-10109 B71-10454 03

Anemometer calibrator

M-FS-21424 B71-10519 03

Pressure sensitive gas flow meter

ARC-10219 B72-10049 06

Fluidic pressure regulators

ARC-10474 B72-10162 06

Improved synthesis of intermetal compounds

HQ-10690 B72-10172 04

Two-stage coaxial gas compressor

ARC-10426 B72-10210 06

Miniature high pressure regulator

ARC-10428 B72-10211 07

Study of in-situ degradation of thermal control surfaces

M-FS-20892 B72-10336 04

High-volume pressure relief valve

KSC-10707 B72-10536 07

Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows

LEWIS-11270 B72-10546 06

Measuring micro-organism gas production

LANGLEY-11326 B73-10241 05

Remotely operated gas-pressure regulator and shuttle valve

NPO-13201 B74-10298 07

Multiple-compartment venting program

MSC-19428 B75-10234 06

GAS SPECTROSCOPY

Leak decay method of helium bombardment leak testing

M-FS-24109 B72-10381 06

Improved nondispersive infrared analyzer

ARC-10802 B74-10243 03

GAS STREAMS

Electrical instrument measures position and velocity of shock waves

ARC-10356 B71-10143 03

Device measures conductivity and velocity of ionized gas streams

XAC-05695 B71-10235 03

Turbulent mixing film cooling correlation

LEWIS-11417 B72-10326 07

Oscillating hot-wire anemometer

NPO-11634 B72-10609 02

A multielement probe for coincident temperature and pressure measurements

LEWIS-11775 B72-10716 06

Investigations of multiple jets in a crossflow

LEWIS-12102 B75-10149 03

GAS TEMPERATURE

Main tank injection pressurization program

LEWIS-11368 B72-10069 09

High speed, self-acting, face-contact shaft seal has low leakage and very low wear

LEWIS-11598 B72-10114 07

Method of determining thermal conductivity in multi-layer insulation systems

M-FS-20213 B72-10154 03

Hydrogen eliminator

ARC-10408 B72-10208 03

Turbulent mixing film cooling correlation

LEWIS-11417 B72-10326 07

Computer program for calculating the temperature field of face seals

LEWIS-11110 B72-10483 09

GAS TRANSPORT

Quick calculation method for fluid flow through duct systems

M-FS-15069 B70-10487 02

Vapor phase growth of group 3, 4, and 5 compounds by HCl transport of elements

LANGLEY-11144 B73-10056 04

Transfer of gaseous oxygen from high-pressure containers and the Joule-Thomson inversion

KSC-10721 B73-10483 04

GAS TUBES

Cathode for use with low density gases

HQ-10687 B72-10530 01

GAS TUNGSTEN ARC WELDING

Spinarc gas tungsten arc torch holder

MSC-15648 B70-10041 08

Butt welder for fine gage wire

LANGLEY-10103 B70-10136 08

Improved welding of Rene-41

M-FS-18821 B70-10367 08

Accurate pointing of tungsten welding electrodes

ARG-10449 B71-10048 08

Torch kit for welding in difficult areas

MSC-15704 B71-10070 08

Ceramic backup ring prevents undesirable weld-metal buildup

NUC-10357 B71-10117 08

Technique for in-place welding of aluminum backed up by a combustible material

LEWIS-11328 B71-10257 08

Fabrication techniques for thoriated-dispersed /TD/ nickel

LEWIS-11240 B71-10369 08

Welding high-strength aluminum alloys

M-FS-22918 B73-10481 04

GAS TURBINE ENGINES

Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F

LEWIS-10933 B70-10183 04

Integrated turbine-compressor provides air flow for cooling

HQ-10442 B70-10295 07

Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds

LEWIS-11152 B71-10173 07

High speed, self-acting, face-contact shaft seal has low leakage and very low wear

LEWIS-11598 B72-10114 07

Airflow distribution control for improved turbine engine performance

LEWIS-11593 B72-10178 07

Computer program for calculating the temperature field of face seals

LEWIS-11110 B72-10483 09

Refractory inserts used to form cooling passages in cast superalloy turbine vanes

LEWIS-11169 B73-10013 08

New nickel-base wrought superalloy with applications up to 1253 K (1800 F)

LEWIS-11828 B74-10003 04

High strength nickel base alloy, WAZ-16, for applications up to 2200 F

LEWIS-12270 B74-10082 04

Computer program to generate engine inlet flow contour maps and distortion parameters

LEWIS-12247 B75-10005 09

GAS TURBINES

Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys

LEWIS-10515 B70-10185 04

Gas turbine combustor insensitive to compressor outlet distortion

LEWIS-10286 B70-10312 07

Computer program for analysis of flow across a gas turbine seal

LEWIS-10975 B70-10317 09

Small hydraulic turbine drives

LEWIS-11064 B70-10416 07

Starter propellants and auxiliary generators for gas turbines

M-FS-18813 B70-10701 07

Turbulent mixing film cooling correlation

LEWIS-11417 B72-10326 07

FORTAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane

LEWIS-11237 B72-10405 09

A flexible cruciform journal bearing mount

LEWIS-11035 B73-10001 07

Design criteria monograph for liquid propellant gas generators

LEWIS-12139 B74-10008 07

Advanced tungsten fiber-reinforced nickel superalloy

LEWIS-12394 B74-10248 04

Properties of air and combustion products of fuel with air

LEWIS-12402 B75-10004 03

Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time

LEWIS-12558 B75-10244 03

Turbine design review text

LEWIS-12560 B75-10287 06

Ceramic thermal protective coating withstands hostile environment of rotating turbine blades

LEWIS-12554 B75-10290 04

GAS VALVES

Economic gas chromatograph system for subambient pressure gas sampling

M-FS-16298 B70-10220 02

Ultrathin gate valve for high vacuum operation

GSFC-11028 B71-10412 07

Proportional pulsed pilot valve

ARC-10228 B71-10468 07

Hermetic isolation valves

ARC-10505 B72-10013 06

Dynamic valve to supply constant total thrust to two orifice jets

ARC-10239 B72-10120 07

Micro regulating ball valve

ARC-10295 B72-10121 06

- Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
High-volume pressure relief valve
KSC-10707 B72-10536 07
- GAS VISCOSITY**
Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04
- GAS-GAS INTERACTIONS**
Space-suit carbon dioxide absorption system: A concept
ARC-10546 B72-10168 05
- GAS-LIQUID INTERACTIONS**
Water cavity degasser for electrolysis cells
ARC-10244 B72-10246 03
Separation of gas from liquid in a two-phase flow system
NPO-11556 B73-10383 03
- GAS-METAL INTERACTIONS**
Regenerable metallic oxide systems for removal of carbon dioxide: A concept
ARC-10570 B72-10420 04
Long-term material compatibility testing system
NPO-11776 B73-10385 04
Induction heating simplifies metal evaporation for ion plating
LEWIS-12595 B75-10288 03
- GASEOUS DIFFUSION**
Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
HQ-10389 B70-10108 03
Concept for a gas operated actuator
NPO-11340 B70-10516 07
- GASEOUS ROCKET PROPELLANTS**
Mass flow controller for gaseous propellants
JSC-14221 B73-10207 06
- GASES**
Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03
Electron energy analyzer
HQ-10373 B70-10138 02
Laser-Doppler gas velocimeter
M-FS-20583 B70-10143 02
Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
Volume-checking tool
KSC-10514 B70-10502 07
Development of a silver-zinc battery system
NPO-11444 B70-10718 02
Spray momentum measuring system
MSC-12305 B71-10137 05
High-temperature, long-life thyatron
LEWIS-11327 B72-10134 01
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
Remote control flare stack igniter for combustible gases
M-FS-21675 B72-10352 07
Evaluating foam heterogeneity
AEC-10046 B72-10365 04
Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07
- Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04
Low frequency sinusoidal pressure generator
LEWIS-11465 B72-10477 01
Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01
Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
Hydrophobic liquid/gas separator for heat pipes
ARC-10656 B72-10549 03
Fluid operated quick release mechanism
M-FS-20205 B72-10640 07
- GASKETS**
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
Flat conductor cable connector with contact separation seal
M-FS-20757 B70-10387 01
Sorption vacuum trap
ERC-90051 B70-10449 06
New type of nonflammable paper
MSC-13432 B70-10546 04
Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04
Limited life item management
M-FS-24020 B71-10196 06
Liquid-hydrogen/nuclear-radiation resistant seals
M-FS-21364 B71-10340 03
Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
Preventing oil migration in vacuum systems
GSFC-11253 B72-10129 04
Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03
Soft, thermally conductive material
LANGLEY-10850 B74-10132 04
- GASOLINE**
Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07
Floating baffle to improve efficiency of liquid transfer from tanks
KSC-10639 B73-10190 07
Gas generators produce hydrogen-rich fuel
NPO-13342 B75-10203 06
Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06
- GASTROINTESTINAL SYSTEM**
Sensor capsule for diagnosis of gastric disorders
HQ-10767 B72-10531 05
- GATES (CIRCUITS)**
Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
Digital frequency discriminator
M-FS-14322 B70-10010 01
Precision full-wave rectifier
ARC-10101 B70-10161 02
Low power NAND gate
M-FS-14487 B70-10203 01
- Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
One-shot multivibrator with complementary metal-oxide-semiconductor components
MSC-13492 B70-10305 01
Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02
Inexpensive automatic ranging for digital voltmeters and frequency counters
NUC-10240 B70-10530 01
Ground computer test trap
KSC-10574 B70-10561 09
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01
Constant current load matches impedances of electronic components
GSFC-10982 B70-10643 01
Active parallel redundancy for electronic integrator-type control circuits
NUC-10231 B71-10040 01
Multiple shutters for a stereoscopic camera
MSC-13507 B71-10065 03
Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
Voltage-controlled oscillator
ARC-10078 B71-10171 01
Wall attachment, fluoric crossover "AND" gate
XLA-07391 B71-10178 07
Efficient digital comparison technique for logic circuits
M-FS-21080 B71-10218 02
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Fast carry accumulator design
M-FS-20902 B71-10274 01
Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01
Improved relay chatter detector
NPO-10355 B71-10292 01
A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01
Novel shift register eliminates logic gates and power switching circuits
GSFC-10517 B71-10322 01
Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01

- Tone-burst technique measures high-intensity sound absorption
 LANGLEY-10667 B71-10395 03
 Digital aspect clock
 ARC-10088 B71-10440 02
 Digital parallel-to-series pulse-train converter
 MSC-12417 B71-10450 01
 Theory and application of feedback shift registers
 NPO-11486 B71-10451 02
 Programmed multiplexing system simultaneously monitors several voltages
 MSC-17139 B71-10517 02
 Improved device measures performance of batteries under load
 ARC-10252 B72-10051 02
 A differential ECG amplifier with single-ended output
 ARC-10411 B72-10061 05
 Voltage-tunable parallel-T filter for remote operation
 NPO-11165 B72-10077 01
 Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02
 Stable photosensor amplifiers
 NPO-11561 B72-10100 01
 Time-lapse camera for microscopy
 ARC-10423 B72-10125 05
 Gate protective device for insulated gate field-effect transistors
 M-FS-21626 B72-10149 01
 A voltage-tunable three-terminal Gunn device
 HQ-10783 B72-10518 01
 Insulated-gate field-effect transistor strain sensor
 LANGLEY-11012 B72-10731 01
 P-channel silicone gate FET
 M-FS-22505 B73-10197 01
 Frequency control circuit for all-digital phase-lock loops
 NPO-11936 B73-10351 01
 Pulse stretcher for narrow pulses
 JSC-14130 B73-10365 02
 Gated compressor, distortionless signal limiter
 NPO-11820 B73-10387 01
 Combined sun-acquisition and sun gate-sensor system for spacecraft attitude control
 NPO-13051 B73-10460 02
 High voltage solid-state relay
 LEWIS-12096 B74-10006 01
- GATES (OPENINGS)**
 Isolated-line commutator-amplifier
 M-FS-20734 B71-10148 02
 Ultrathin gate valve for high vacuum operation
 GSFC-11028 B71-10412 07
 Sprue cutoff tool for molded FCC plugs
 M-FS-20236 B71-10421 08
 Gas chromatograph sample-transfer valve
 ARC-10427 B71-10474 04
- GAUSS EQUATION**
 Subroutines for evaluating single and multiple integrals using modified Romberg method
 NPO-11718 B71-10138 09
- GAUSS-MARKOV THEOREM**
 Theory and application of Kalman filtering
 M-FS-20491 B70-10309 06
- Table for estimating parameters of Weibull distribution
 M-FS-18817 B71-10436 03
- GE COMPUTERS**
 Computer program for discounted cash flow/rate of return evaluations
 M-FS-19040 B71-10377 09
 Automated Data Management Information System (ADMIS)
 KSC-10619 B73-10053 09
 Computer program for spacecraft-booster separation spring selection, set composition, and location determination
 GSFC-11616 B74-10037 09
- GE 625 COMPUTER**
 Synthesis of dynamic systems
 M-FS-21490 B71-10491 09
- GE 635 COMPUTER**
 Synthesis of dynamic systems
 M-FS-21490 B71-10491 09
 Systems effectiveness evaluation program
 HQ-10306 B72-10458 09
- GEAR TEETH**
 Flexible or rigid extending arm
 MSC-13512 B70-10465 07
 Improved system for measuring speed of rotating machinery
 ARC-10413 B72-10179 07
- GEARS**
 Slow-speed drives for miniature devices
 NPO-10700 B70-10007 02
 Magnetic gear backup
 MSC-13408 B70-10087 07
 Two-speed wheel-drive system without lubrication
 M-FS-20645 B70-10193 07
 Fluoric-controller pneumatic stepping motor system
 LEWIS-11051 B70-10332 02
 Special wrench for B-nuts reduces torque stress in tubing
 MSC-15885 B70-10550 07
 Multimode ergometer system
 M-FS-21044 B71-10107 05
 Predicting service life margins
 M-FS-24015 B71-10194 06
 Improved orthopedic arm joint
 M-FS-21611 B71-10485 05
 Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04
 Improved system for measuring speed of rotating machinery
 ARC-10413 B72-10179 07
 Mechanical planetary compensating drive system
 ARC-10462 B73-10497 06
 Improved geneva mechanism
 LANGLEY-11443 B74-10030 06
 Design criteria monograph on turbopump gears
 LEWIS-12377 B75-10010 06
- GELATINS**
 Development of non-sweet, flavored food cubes
 MSC-14002 B71-10521 05
 Stabilization of lactate dehydrogenase
 ARC-10415 B72-10062 05
 Halogenation of microcapsule walls
 ARC-10410 B72-10161 04
 An ingestible temperature-transmitter
 ARC-10583 B72-10275 01
 Dichromated-gelatin hologram process for improved optical quality
 M-FS-23170 B75-10099 03
- GELATION**
 Growing single crystals in silica gel
 ERC-10306 B70-10479 02
 Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
 LEWIS-11574 B72-10330 06
- GELLED PROPELLANTS**
 Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
 LEWIS-11574 B72-10330 06
 Electromagnetic rheometer
 ARC-10525 B72-10416 04
- GELLED ROCKET PROPELLANTS**
 Rising-plate rheometer
 ARC-10524 B72-10026 03
 Cryogenic gel flow viscometer
 ARC-10523 B72-10180 03
- GELS**
 Preparation of fine-particles at cryogenic temperatures
 NPO-10250 B70-10182 04
 Growing single crystals in silica gel
 ERC-10306 B70-10479 02
 Microorganism sample device
 LANGLEY-10258 B71-10487 05
- GENERAL AVIATION AIRCRAFT**
 A study of NACA and NASA published information of pertinence in the design of light aircraft
 LANGLEY-10778 B70-10725 06
- GENERATORS**
 Radiometric evaluation of antenna-feed component losses
 NPO-11238 B70-10344 02
 High amplitude sinusoidal pressure generator
 LEWIS-11241 B70-10635 07
 Portable circuit-interruption indicator
 KSC-10546 B71-10246 02
- GENETICS**
 Biological handbook for engineers
 M-FS-20349 B70-10255 05
 Reproductive cell separation: A concept
 M-FS-22627 B73-10198 05
- GEOCENTRIC COORDINATES**
 Expanded sun-look angle program
 MSC-13176 B70-10602 09
 Geometric field-line calculations
 GSFC-11597 B72-10674 09
- GEOCHEMISTRY**
 Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03
- GEODESY**
 Laser altimeter
 M-FS-13691 B70-10196 02
 Gravitational gradiometer measures mass changes
 M-FS-20814 B72-10140 03
- GEODETIC COORDINATES**
 Geometric field-line calculations
 GSFC-11597 B72-10674 09
- GEOGRAPHY**
 Multispectral data analysis: LARSYS III
 MSC-14823 B75-10235 03
- GEOLOGY**
 Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Swept-frequency UHF radiometer for deep probes of earth - A concept
 MSC-13428 B70-10617 02
 Spectral emission measurement of igneous rocks using a spectroradiometer
 M-FS-20837 B70-10661 04
 Hand-held photomicroscopy system
 ARC-10468 B72-10190 03

- Multispectral data analysis: LARSYS
III
MSC-14823 875-10235 03
- GEOMAGNETISM**
Magnetometer with miniature transducer
and automatic transducer scanning
apparatus
LANGLEY-11617 874-10142 02
- GEOMETRY**
Prediction of gas leakage of
environmental control systems
HQ-10270 870-10201 05
Interaction of crippling and
torsional-flexural instabilities for centrally
loaded columns
M-FS-20556 870-10598 06
Optical probing of supersonic
aerodynamic turbulence
M-FS-20686 870-10665 03
Starter propellants and auxiliary
generators for gas turbines
M-FS-18813 870-10701 07
High-impact dynamic-response analysis
of nonlinear structures
NPO-11716 871-10134 09
Accumulative weights program
M-FS-15066 871-10181 09
ELAS8 - Computer program for linear
structure equilibrium problems
NPO-11555 871-10185 09
Computer program /TURBLE/ for
calculating velocities and streamlines in
turbomachines
LEWIS-10788 871-10392 09
Computer program optimizes design of
nuclear radiation shields
LEWIS-10998 871-10400 09
Planet geometric center tracker
ARC-10084 871-10445 02
Instrument accurately measures stress
loads in threaded bolts
M-FS-21121 871-10486 01
A low-altitude satellite interaction study
GSFC-11384 871-10499 09
Vibration characteristics of ring-stiffened
orthotropic shells of revolution
LANGLEY-10989 871-10535 09
Algorithm for Liapunov stability analysis
ARC-10498 872-10023 09
Increasing the response of PIN
photodiodes to the ultraviolet
ARC-10274 872-10053 03
Program for the transient response of
ablating axisymmetric bodies including the
effects of shape change
LANGLEY-11049 872-10068 09
Optimization technique for problems with
an inequality constraint
ARC-10522 872-10222 09
- GEOPHYSICS**
Intruder detection system
ARC-10097 870-10638 02
Quasars as very-accurate clock
synchronizers
NPO-13276 875-10114 02
- GERMANIUM**
Ultrasound reference pulser for
high-resolution spectrometers
ARG-10364 870-10216 01
Thermally cascaded thermoelectric
generator
NPO-10753 870-10280 03
Traveling-wave photodetector has
sub-nanosecond response
GSFC-10831 870-10641 02
- Microwave biasing improves detector
response in the infrared region
GSFC-11050 871-10313 01
Miniature carbon dioxide sensor
MSC-13332 871-10536 03
A reliable liquid helium detector
LEWIS-11487 872-10145 01
Overlap diffusion for increasing
phototransistor dynamic range
M-FS-20407 872-10347 01
Improved solid-state triode construction
NPO-13064 874-10107 01
- GERONTOLOGY**
Acceleration of the aging process by
oxygen
ARC-10928 875-10030 05
- GETTERS**
Gettering capsule for removing oxygen
from liquid lithium systems
LEWIS-11509 873-10002 04
- GIMBALS**
Flexible pivot mount eliminates friction
and hysteresis
M-FS-20725 870-10577 07
Improved high-temperature gimbal joint
LEWIS-11705 872-10489 06
Computer program to generate attitude
error equations for a gimbaled platform
M-FS-21991 872-10624 09
Reduction of noise in gyro outputs
NPO-11603 872-10743 06
- GLANDS (SEALS)**
Fluid injection device for high-pressure
systems
MSC-15635 870-10307 06
- GLASS**
Piezoelectric transducer
HQ-10548 870-10157 01
Preparation of fine-particles at cryogenic
temperatures
NPO-10250 870-10182 04
Design and evaluation of three-phase
fibrous composite structures
HQ-10267 870-10205 04
Integrated turbine-compressor provides
air flow for cooling
HQ-10442 870-10295 07
Radiant heating concept efficient for
light-transmitting windows
M-FS-20630 870-10324 03
Reducing streak film data via electronic
cross correlator
M-FS-18804 870-10365 01
Effect of wall roughness on liquid
oscillations damping in rectangular tanks
M-FS-20799 870-10388 06
High-temperature "hydrostatic"
extrusion
NPO-10811 870-10428 08
High expansion coefficient glasses can
be sealed to common metals
LEWIS-10698 870-10429 08
High temperature glass coatings for
superalloys and refractory metals
LEWIS-10700 870-10430 08
Multilayer screen gives cathode ray tube
high contrast
ERC-10217 870-10454 01
Glass-to-metal bonding process improves
stability and performance of semiconductor
devices
ERC-10264 870-10477 01
Less-expensive Rochon prisms
M-FS-20554 870-10681 03
Improved protection for silicon solar
cells
LEWIS-11065 870-10706 08
- Wide-angle, circularly polarized,
omnidirectional-array antenna
GSFC-10928 871-10033 01
Thin spray film thickness measuring
technique
M-FS-20842 871-10062 08
Inexpensive anti-fog coating for
windows
MSC-13530 871-10149 04
Effect of size on cracking of materials
NPO-11602 871-10158 04
Improved reversible coulometer cell
SAN-10051 871-10176 02
Plating by glass-bead peening
GSFC-11163 871-10256 08
Man-machine communication - A
transparent switchboard for computers
MSC-13746 871-10263 02
Coatings from copolymers of
tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 871-10303 04
Instrument detects bacterial life forms
GSFC-10972 871-10312 05
Liquid-hydrogen/nuclear-radiation
ant seals
M-FS-21364 871-10340 03
Cadmium plated steel caps seal anodized
aluminum fittings
M-FS-20137 871-10355 05
Simplified procedure for emission
spectrochemical analysis
LEWIS-10985 871-10359 04
Simple spectroscope used with solid
state image amplifier over wide spectral
range
M-FS-21345 871-10378 03
Measuring internal dimensions of small
transparent objects
LANGLEY-10712 871-10505 08
Glass tube splitting tool
MSC-17183 871-10516 07
Nematic liquid crystals for optical
shutters: A concept
NPO-11367 872-10083 03
Glass technology involved in the
manufacture of magnetometer
components
GSFC-11283 872-10132 03
Interferometric rotation sensor
ARC-10278 872-10274 03
Stabilization of porous glass
reverse-osmosis membranes
ARC-10646 872-10309 04
Inorganic glass ceramic slip rings
M-FS-20711 872-10313 04
Nonflammable potting, encapsulating
and/or conformal coating compound
MSC-13499 872-10337 04
Failure in glass
AEC-10088 872-10364 04
An improved apochromatic wedge
utilizing optical molecular contact bonding
GSFC-11082 872-10388 03
Purification of contaminated water by
filtration through porous glass
ARC-10655 872-10412 04
Radiation-induced nickel deposits
LEWIS-10965 872-10456 04
Mechanically and thermally stable maser
cavity resonator
HQ-10790 872-10523 01
Glass transition temperatures of liquid
prepolymers obtained by thermal
penetrometry
NPO-11730 873-10036 04

- Solar-energy absorber: Active infrared (IR) trap
M-FS-22743 873-10484 06
- Precision glasscutter
LANGLEY-11604 874-10031 07
- GLASS COATINGS**
High voltage electrical insulation coating for refractory materials
LEWIS-11479 872-10290 04
Glass encapsulation provides extra protection for IC semiconductor devices
M-FS-21310 873-10054 01
Improved mold release for filled-silicone compounds
JSC-19300 873-10338 04
- GLASS FIBERS**
Phenolic cutter for machining foam insulation
M-FS-14170 870-10089 07
A new low-expansion nonflammable printed circuit board
M-FS-20408 870-10154 01
Progress in research on chlorate candle technology
MSC-13409 870-10258 04
Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 870-10273 04
Development of lightweight cryogenic tank supports
M-FS-20726 870-10291 07
Fiberglass honeycomb elements formed quickly and cheaply
LANGLEY-10125 870-10342 08
Improved linings for integrating spheres
MSC-12237 870-10413 03
Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 870-10432 04
Flame-resistant thin panels of glass fabric-polyimide resin laminates
MSC-15562 870-10490 04
Improved heat-resistant garments
MSC-12109 870-10544 08
New type of nonflammable paper
MSC-13432 870-10546 04
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 870-10573 04
The low-cost cryostat
NUC-11034 870-10592 03
Rugged, low-conductance, heat-flow probe
MSC-13443 870-10622 03
Low-cost quasi-parabolic antenna
LEWIS-11291 871-10121 01
New understanding of fiber composite materials
NPO-11605 871-10161 04
Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 871-10208 04
Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 871-10261 04
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 871-10268 08
Opacified fibrous thermal insulation
LEWIS-11235 871-10406 03
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 872-10175 04
Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 872-10346 04
- Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 872-10445 08
Built-in bleeder system in laminated plastic structures
MSC-17713 872-10562 08
Internal capillary insulation for cryogenic tanks
LEWIS-11234 872-10626 06
Evaluation of thermal insulation materials
NPO-11586 873-10020 04
Production of circular polymer-glass fabric composites
M-FS-22125 873-10069 04
Filament winding technique produces strong lightweight oxygen tanks
M-FS-22470 873-10082 08
Lightweight graphite/polyimide panels
JSC-14375 873-10121 04
Manufacture and quality control of interconnecting wire harnesses
M-FS-22511 873-10211 01
Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 873-10213 04
Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 873-10258 08
Design Guide for glass fiber reinforced metal pressure vessel
LEWIS-12042 873-10311 08
Adhesive coating eliminated in new honeycomb-core fabrication process
LANGLEY-11134 873-10439 08
Reusable silica surface-insulation material
ARC-10721 873-10504 04
Polyimide fiber-glass composite resists high temperatures
ARC-10782 873-10505 04
Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 874-10027 04
Suspension system for lightweight cryogenic tank
MSC-14080 875-10270 06
- GLASSWARE**
Modifications to a vacuum assisted filtering device to minimize contamination
MSC-13733 871-10277 04
Glass tube splitting tool
MSC-17183 871-10516 07
- GLAZES**
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 871-10394 04
- GLIDERS**
New aircraft instrument indicates turbulence intensity
LANGLEY-11833 875-10227 03
- GLIDING**
Portable lightweight bandsaw
M-FS-16927 871-10237 07
- GLOBES**
Orbit, reentry, and landing attachment for globes
LANGLEY-10626 870-10656 03
- GLOVES**
Convolute fabric for full-pressure gloves
ARC-10529 872-10215 04
- GLOW DISCHARGES**
Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 870-10475 04
- Polymeric coatings using electronic excitation
HQ-10698 872-10257 04
Baffle to confine glow discharge in ion pump
M-FS-21575 872-10324 03
Ion plating seals microcracks or porous metal components
LEWIS-11657 872-10397 04
- GLUCOSE**
Immobilized phosphorylase for synthesis of polysaccharides from glucose
ARC-10680 872-10550 04
- GLUES**
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 871-10342 04
- GLYCEROLS**
Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 870-10020 03
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 870-10397 08
Inexpensive anti-fog coating for windows
MSC-13530 871-10149 04
The deterioration of intermediate moisture foods
MSC-13827 871-10332 05
Stabilization of lactate dehydrogenase
ARC-10415 872-10062 05
Fire retardant polyisocyanurate foam
ARC-10280 872-10269 04
- GLYCOLS**
Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 870-10020 03
Colorimetric detection of ethylene glycol vapor
MSC-13222 870-10031 03
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 871-10331 04
- GOLAY DETECTOR CELLS**
Vibrating ribbon bolometer: A concept
XAC-10768 872-10170 03
- GOLD**
Thermoelectric radiometer
ARC-10138 870-10056 02
Superconducting "transistor" acts as high-speed switch
HQ-10547 870-10082 01
Cryogenic thermocouple calibration tables
NUC-10551 870-10197 03
An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 870-10275 01
Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 870-10395 06
Thermocouple installation in thin-walled tubes
LEWIS-11222 870-10655 01
Method of joining metals of significantly different expansion rates
NPO-12076 871-10028 08
Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 872-10318 04
Humidity resistant solar cell contacts
HQ-10674 872-10517 04
Thin-film ultraviolet detector and spectrometer
NPO-11432 872-10701 03

- Boron-10 loaded inorganic shielding material
M-FS-22280 872-10740 04
Low-closing-force seal
ARC-10775 873-10380 06
- GOLD ALLOYS**
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 870-10145 01
Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10277 870-10445 03
High-temperature nickel-brazing alloy
LEWIS-10928 870-10537 08
Low-cost high-temperature brazing material
LEWIS-11209 870-10672 04
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 872-10339 04
Stable palladium alloys for diffusion of hydrogen
NPO-11747 873-10024 04
- GOLD COATINGS**
Laser scribing of silicon wafers
ERC-10386 870-10437 01
Economical printed circuit front panel for computer use
KSC-10573 870-10560 01
Microbalance accurately measures extremely small masses
HQ-09962 870-10607 01
Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 871-10168 08
Improved reversible coulometer cell
SAN-10051 871-10176 02
Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 871-10253 08
Durable cathodes for high-power inert-gas arcs
LEWIS-11162 871-10264 03
Sputtered gold mask for deep chemical etching of silicon
LANGLEY-11661 875-10089 08
- GONDOLAS**
Torque control system
GSFC-11077 875-10085 06
- GRADIENTS**
Thermal scale modeling
M-FS-21268 871-10432 03
Introduction of lithium into the front surface of solar cells
NPO-11404 872-10086 02
- GRAFTING**
Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 871-10291 04
- GRAIN BOUNDARIES**
Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
M-FS-18790 870-10213 04
Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 870-10396 04
The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 870-10527 04
High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 871-10489 04
- GRAND TOURS**
Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 870-10649 03
Radioisotope thermionic power supply for spacecraft
ARC-10438 872-10212 03
- GRANITE**
Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 870-10661 04
- GRANULAR MATERIALS**
Granular two-phase insulation systems
NPO-12068 871-10290 04
Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 872-10127 03
- GRAPHIC ARTS**
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 871-10122 09
Psychrometric chart for physiological research
ARC-10394 871-10470 03
Radiation-induced nickel deposits
LEWIS-10965 872-10456 04
Viewgraph preparation made easier
LANGLEY-11612 874-10094 03
Three-dimensional models aid visualization of engineering drawings
NPO-13394 875-10179 08
- GRAPHITE**
High precision cryogenic thermal conductivity standards
NUC-10555 870-10310 04
Biaxial prestressing of brittle materials
M-FS-20272 870-10316 04
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 870-10330 04
High temperature ion source
ERC-10197 870-10379 03
Contact material for pressure-sintering ferrites
ERC-10213 870-10380 01
Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 870-10395 06
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 870-10408 06
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 870-10467 04
Synthesis of diamonds
M-FS-20698 870-10513 08
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 870-10573 04
Strain gage installation manual
M-FS-18822 870-10715 06
Producing graphite with desired properties
NUC-11001 871-10042 04
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 871-10046 03
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 871-10103 06
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 871-10125 01
- New understanding of fiber composite materials
NPO-11605 871-10161 04
Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 871-10212 08
Promising born/graphite/resin composites
M-FS-21126 871-10217 04
Protective coating for salt-bath brazing
LEWIS-90255 871-10381 08
Shielding method for polycrystalline and epitaxy growths
M-FS-20162 871-10434 04
Graphite-reinforced aluminum composite
M-FS-21077 871-10482 04
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 871-10498 01
Electrodes for sealed secondary batteries
ARC-10238 872-10050 02
Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 872-10073 09
Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 872-10157 04
Fabrication of large ceramic electrolyte disks
ARC-10320 872-10202 03
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 872-10258 06
Graphite and boron-reinforced composite materials data summary
M-FS-21691 872-10294 04
Inorganic glass ceramic slip rings
M-FS-20711 872-10313 04
Titanium reinforced boron polyimide composite
M-FS-21916 872-10353 04
Research on bearing lubricants for use in a high vacuum
M-FS-22119 872-10469 04
Fabrication of cooled, graphite-lined structures
LEWIS-11741 872-10593 08
Polyimide bonded graphite fluoride: A new long life solid lubricant coating
LEWIS-11864 872-10628 04
Technique for the polymerization of monomers for PPQ/graphite fiber composites
LEWIS-11879 873-10014 04
Preparation of prepreg graphite tape with insoluble polymer
JSC-14313 873-10084 04
Lightweight graphite/polyimide panels
JSC-14375 873-10121 04
Graphite/polyimide laminates with near-zero thermal expansion
JSC-17662 873-10254 04
Strain arrestor plate for mounting rigid insulating tiles
JSC-14182 873-10465 06
Graphite ionization vacuum gauge
LANGLEY-11338 874-10136 03
Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
LEWIS-12366 875-10066 04

Tailor making high performance graphite fiber reinforced PMR polyimides
LEWIS-12416 B75-10137 04
Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06
Fabrication and repair of graphite/epoxy laminates
M-FS-23228 B75-10164 08
Low-Cost thin-layer silicon solar cells
GSFC-12023 B75-10293 04

GRAPHS (CHARTS)
A method for rapidly evaluating the linearity of calibration data
M-FS-14834 B70-10085 03
Graphical method to predict the dynamic response of FM receivers
KSC-10111 B70-10119 01
Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
Simplified computation of compressible fluid flow parameters
KSC-10400 B70-10225 06
Methods for measuring the loudness and noisiness of complex sounds
HQ-10332 B70-10260 03
High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
Quick calculation method for fluid flow through duct systems
M-FS-15069 B70-10487 02
Digital-voltage curve generator
NPO-11104 B70-10590 02
Simple data-smoothing and noise-suppression technique
M-FS-20803 B70-10627 06
Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
Digital simulation program improved
M-FS-01504 B70-10705 09
High-speed digital plotter
ARG-90001 B71-10049 02
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09

Rising-plate rheometer
ARC-10524 B72-10026 03
Graph for locked rotor current
MSC-15703 B72-10075 06
A method for calculating the effects of design errors and measurement errors on pump performance
LEWIS-11503 B72-10292 07
The design of an automated verification of redundant systems
KSC-10702 B72-10295 02
Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 B72-10406 04

GRATINGS (SPECTRA)
Airborne spectrometer senses several gases
MSC-13234 B70-10438 03
Laser wavelength selector and output coupler
ERC-10248 B70-10507 02
Ultraviolet interferometer
HQ-10546 B71-10026 03
Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03
Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 B72-10440 03
Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
GSFC-11860 B73-10516 03

GRAVIMETERS
Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 B71-10232 03

GRAVIMETRY
Microflora in soils of desert regions
NPO-11215 B70-10253 05

GRAVITATION
Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 B71-10232 03

GRAVITATIONAL CONSTANT
Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07

GRAVITATIONAL EFFECTS
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
Metabolic breath analyzer
M-FS-21415 B71-10466 05
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03

GRAVITATIONAL FIELDS
Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
Gravitational gradiometer measures mass changes
M-FS-20814 B72-10140 03

Water cavity degasser for electrolysis cells
ARC-10244 B72-10246 03

GRAVITY GRADIENT SATELLITES
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08

GRAVITY GRADIOMETERS
Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
Gravitational gradiometer measures mass changes
M-FS-20814 B72-10140 03

GRAVITY WAVES
Atmospheric density variations related to internal gravity waves
M-FS-21637 B72-10143 03

GREASES
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04
Lubrication handbook
M-FS-22326 B73-10062 04

GREEN FUNCTION
High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03

GRIDS
Electron energy analyzer
HQ-10373 B70-10138 02
Thermionic triode generates ac power
ERC-10284 B70-10499 01
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
Isogrid structure
M-FS-21567 B72-10323 06

GRIFFITH CRACK
New understanding of fiber composite materials
NPO-11805 B71-10161 04

GRINDING
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08

GRINDING (COMMINUTION)
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
A lightweight, high output soil sampler
NPO-10797 B71-10159 07

GRINDING (MATERIAL REMOVAL)
Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06
Accurate pointing of tungsten welding electrodes
ARG-10449 B71-10048 08
Machine finishes balls to high degree of roundness
M-FS-21448 B72-10595 08

GRINDING MACHINES
Low-cost orbiting grinder for cutting ducts
M-FS-20684 B70-10126 07
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
Hobel stripper for shielded and unshielded flat conductor cable
M-FS-20120 B71-10060 08
Electro-chemical grinding
LANGLEY-10801 B72-10744 08
Biodetection grinder
M-FS-22833 B73-10474 05

GROOVES

- Chatter-free check valve - A concept
MSC-13262 B71-10067 07
Portable lightweight bandsaw
M-FS-16927 B71-10237 07
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08
Zero-leakage valves
ARC-10506 B72-10024 06
Tubing cutter
NPO-11524 B72-10095 07
Hydraulic valve lifter remover
M-FS-21377 B72-10110 07
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07

GROOVING

- Technique for improving hydrodynamic gyro bearings
M-FS-20764 B70-10301 06
Directional control of radiant heat
LEWIS-90237 B70-10321 03
Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06
Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
Hobel stripper for shielded and unshielded flat conductor cable
M-FS-20120 B71-10060 08
Sputter etching of hemispherical bearings
HQ-10712 B72-10534 08

GROUND CREWS

- Aircraft communication via telefacsimile system
M-FS-20839 B72-10139 02

GROUND EFFECT

- Virtual-image display system for flight simulators
ARC-10175 B71-10427 03

GROUND STATIONS

- Deep space network
NPO-11562 B72-10043 01

GROUND SUPPORT EQUIPMENT

- Ground computer test trap
KSC-10574 B70-10561 09
Diagnostic capability added to digital events evaluator
KSC-10526 B71-10001 02
Aircrew oxygen system
ARC-10247 B72-10195 05

GROUND WATER

- Assessment of water pollution by airborne measurement of chlorophyll
ARC-10648 B72-10566 04

GROUND-AIR-GROUND COMMUNICATIONS

- Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
Aircraft communication via telefacsimile system
M-FS-20839 B72-10139 02
Traffic control system and method
GSFC-10087 B74-10024 02

GROUP THEORY

- Optimizing designs of two-level factorial experiments given partial prior information (NAMER)
LEWIS-11708 B72-10726 09

GROWTH

- A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05

Analytical methods for bacterial kinetics

- studies
LRL-10011 B71-10192 05

GUARDS (SHIELDS)

- Overlay board for control consoles
ARC-10007 B72-10191 02

GUIDANCE (MOTION)

- A cable stabilizer for outdoor elevators
KSC-10513 B72-10283 07
Fine guidance for a spaceborne telescope
GSFC-11487 B73-10468 03

GUIDANCE SENSORS

- A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03

GUIDE VANES

- Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09

GUMS (SUBSTANCES)

- Protective coating for salt-bath brazing
LEWIS-90255 B71-10381 08
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04

GUNN EFFECT

- Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
A voltage-tunable three-terminal Gunn device
HQ-10783 B72-10518 01
Temperature-stable Gunn-diode oscillator
M-FS-23242 B75-10306 01

GUNS

- Economical technique for fragmentation testing
ARC-10792 B74-10052 04

GUNS (ORDNANCE)

- Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

GUST ALLEVIATORS

- Gust alleviation system to improve ride comfort of light airplanes
LANGLEY-11771 B75-10224 03

GUST LOADS

- Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06

GYP SUM

- Effect of size on cracking of materials
NPO-11602 B71-10158 04

GYRATORS

- Integrable power gyrator
M-FS-22342 B73-10159 02
Gyrator circuit using field effect transistors
M-FS-21433 B73-10161 02
Integrated p-channel MOS gyrator
M-FS-22343 B73-10217 02

GYROCOMPASSES

- A simple dead-reckoning navigational system
M-FS-21165 B72-10409 02

GYROSCOPES

- Technique for improving hydrodynamic gyro bearings
M-FS-20764 B70-10301 06

Hydrodynamic squeeze-film bearings for gyroscopes

- M-FS-20802 B70-10389 07

Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts

- M-FS-20860 B71-10072 07

Improved transducer for squeeze-film bearings

- M-FS-20826 B71-10140 07

Attitude controls for VTOL aircraft

- XAC-8972 B71-10202 05

Hydrostatic liquid-bearing for precision gyro

- M-FS-21138 B71-10207 07

Inertial reference unit

- NPO-11518 B72-10094 02

Electronic integrator for gyro rate output voltages

- NPO-11499 B72-10555 01

Reduction of noise in gyro outputs

- NPO-11603 B72-10743 06

Temperature compensation of digital inertial sensors

- NPO-13044 B74-10106 02

GYROSTABILIZERS

Performance evaluation system for inertial navigation equipment

- MSC-13542 B71-10087 02

H**HABITABILITY**

Shuttle orbiter storage locker system: A study

- JSC-14448 B73-10287 08

HAFNIUM ALLOYS

Oxidation resistant iron and nickel alloys for high temperature use

- LEWIS-10936 B70-10210 04

HAFNIUM OXIDES

High-temperature oxidation and erosion-resistant refractory coatings

- LEWIS-11221 B70-10634 04

HALF LIFE

Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay

- ARG-10281 B70-10608 03

HALIDES

Stress corrosion crack inhibiting method for titanium

- NPO-10271 B70-10129 03

Al/Cl₂ molten salt battery

- HQ-10696 B72-10527 01

HALL EFFECT

Hall effect encoding of brushless dc motors

- GSFC-10789 B70-10188 01

Hall effect transducer gives electrical output proportional to meter shaft rotation

- LANGLEY-10620 B70-10298 01

Resistivity and Hall measurements of thermoelectric materials

- M-FS-20470 B71-10015 03

Beryllium thin films for resistor applications

- ARC-10485 B72-10021 01

A brushless dc spin motor for momentum exchange altitude control

- M-FS-14952 B72-10448 02

A magnetic mouse activity meter

- HQ-10664 B72-10482 05

HALL GENERATORS

- Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Solid-state controller
JSC-12394 B73-10466 06

HALOGEN COMPOUNDS

- Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04
Photochromism of dihydroquinolines
HQ-10574 B70-10574 04
Halogenation of microcapsule walls
ARC-10410 B72-10161 04

HALOGENATION

- Halogenation of microcapsule walls
ARC-10410 B72-10161 04
Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04

HAMILTONIAN FUNCTIONS

- Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 B71-10151 09

HAMMERS

- Synthesis of diamonds
M-FS-20698 B70-10513 08
High-speed digital plotter
ARG-90001 B71-10049 02
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07

HAND (ANATOMY)

- Hand tremor and activity sensor
ARC-10849 B75-10057 05

HANDBOOKS

- Simplified computation of compressible fluid flow parameters
KSC-10400 B70-10225 06
Biological handbook for engineers
M-FS-20349 B70-10255 05
Updated, expanded, fluid properties handbook
M-FS-21189 B71-10078 04
Instruction manuals for radiographic nondestructive testing
M-FS-21350 B71-10156 06
Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07
Qualifications and certification of nondestructive testing personnel
M-FS-20850 B71-10271 06
Compressed gas handbook
KSC-10662 B71-10272 03
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Standard environmental testing practices
NPO-11567 B72-10101 02
The design of an automated verification of redundant systems
KSC-10702 B72-10295 02
Manufacturing contamination prevention handbook
M-FS-19113 B72-10394 08
Radiological control manual
M-FS-22092 B72-10460 03
Phase-change materials handbook
M-FS-22064 B72-10464 04
Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08
Flat conductor cable survey
M-FS-22493 B73-10055 01

Lubrication handbook

- M-FS-22326 B73-10062 04
Handbook on thermophysical properties of oxygen
LEWIS-11962 B73-10187 04
Handbook of cleaning requirements, procedures, and verification techniques for oxygen systems
LEWIS-11963 B73-10188 04
Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04
Design Guide for glass fiber reinforced metal pressure vessel
LEWIS-12042 B73-10311 08
Materials data handbook on titanium 6Al-4V
M-FS-22796 B73-10372 04
Materials data handbooks on aluminum alloys
M-FS-22798 B73-10373 04
Isogrid design handbook
M-FS-22686 B73-10395 06
Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04
Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
Design parameters for toroidal and bobbin magnetics
NPO-13441 B73-10459 01
Welding high-strength aluminum alloys
M-FS-22918 B73-10481 04
Stereoscopic computer graphics display system
M-FS-22322 B73-10526 09
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
Guidebook of nondestructive evaluation techniques for materials and structures
LEWIS-12272 B74-10122 04
Telecommunications systems design techniques handbook
NPO-13245 B74-10284 02
Turbine design review text
LEWIS-12560 B75-10287 06
Flammability study of materials in oxygen environments
M-FS-23306 B75-10310 04

HANDLES

- A concept for universal pliers
KSC-10768 B72-10685 07
A band clamp with a spring toggle lever
MSC-14736 B74-10240 07

HANKEL FUNCTIONS

- Fast Fourier transformation computer using fast counters
NPO-13110 B75-10175 02

HARDENERS

- Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04

HARDENING (MATERIALS)

- Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06

HARDNESS

- Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04

- Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01

HARDNESS TESTS

- Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04
Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04
Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04
Fracture toughness testing data: A technology survey and bibliography
LEWIS-12503 B75-10139 03

HARDWARE

- Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 B70-10649 03
Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09
Predicting service life margins
M-FS-24015 B71-10194 06
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Microbial burden prediction model program
NPO-11709 B71-10401 09
Theory and application of feedback shift registers
NPO-11486 B71-10451 02
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
Tool expedites installation of BNC connectors
ARC-10327 B71-10480 07
Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08
Vise to hold bones or other irregular objects
ARC-10679 B72-10569 07
Flat conductor cable survey
M-FS-22493 B73-10055 01

HARMONIC ANALYSIS

- Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01

- Real-time speech analyzer
NPO-13465 B75-10205 02
- Microwave diode amplifiers with low intermodulation distortion
GSFC-11668 B75-10213 01
- HARMONIC FUNCTIONS**
Geometric field-line calculations
GSFC-11597 B72-10674 09
- HARMONICS**
A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02
- Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
- Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02
- A real-time statistical time-series analyzer
MSC-12428 B71-10276 02
- High efficiency telemetry method
NPO-10388 B71-10371 02
- Waveshaping electronic circuit
M-FS-14916 B71-10429 01
- Planet geometric center tracker
ARC-10084 B71-10445 02
- Hexapole magnet field analysis
GSFC-10995 B72-10113 03
- Extended range harmonic filter
LEWIS-12064 B73-10313 02
- Combined diplexer and harmonic filter
LEWIS-12059 B73-10410 02
- Real-time speech analyzer
NPO-13465 B75-10205 02
- HARNESSES**
Wiring harnesses documented by punched-card technique
NPO-11249 B70-10091 09
- Zero-g simulation system for therapeutic application
M-FS-14671 B71-10034 04
- Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
- Folding tools for flat conductor cable harnesses
M-FS-20121 B71-10415 08
- Quick-donning backpack harness
LANGLEY-10102 B72-10641 05
- Seat belt restraint system
ARC-10519 B72-10692 06
- Manufacture and quality control of interconnecting wire harnesses
M-FS-22511 B73-10211 01
- Plug-in integrated/hybrid circuit
M-FS-24470 B73-10476 01
- HASTELLOY (TRADEMARK)**
High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
- Improved welding of Rene-41
M-FS-18821 B70-10367 08
- Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
- Ultrasonics used for high-precision nondestructive inspection of brazed joints
NUC-10352 B71-10045 08
- HATCHES**
Unified hatch system
MSC-15813 B71-10095 06
- HAZARDS**
Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
- Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 B70-10335 01
- Strain gage installation manual
M-FS-18822 B70-10715 06
- Improved method of using paraformaldehyde as a disinfectant
MSC-15887 B71-10096 05
- Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
- Synthesis of fluorinated organic compounds using oxygen difluoride
NPO-12061 B71-10154 04
- Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07
- Generalized safety equation - A concept
M-FS-20522 B71-10183 06
- Predicting service life margins
M-FS-24015 B71-10194 06
- Limited life item management
M-FS-24020 B71-10196 06
- Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
- Hot tap thermowell installation
MSC-12427 B71-10302 07
- Estimating carbon monoxide exposure
MSC-17211 B71-10319 04
- Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02
- New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
- Airlock caution and warning system
M-FS-21576 B72-10467 02
- Safe electrical receptacle and modified plug
KSC-10817 B73-10366 01
- Risk management technique for liquefied natural gas facilities
KSC-11005 B75-10193 04
- Safety management of a complex R&D ground operating system
LEWIS-12559 B75-10241 07
- HEAD (FLUID MECHANICS)**
Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07
- Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
- HEAD MOVEMENT**
Eye point-of-regard system
ARC-10360 B71-10476 05
- HEALTH**
Estimating carbon monoxide exposure
MSC-17211 B71-10319 04
- An ingestible temperature-transmitter
ARC-10583 B72-10275 01
- HEART**
Control system for an artificial heart
LEWIS-11057 B70-10469 05
- Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
- Heart simulator
M-FS-21609 B72-10131 02
- Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
- HEART DISEASES**
EKG isolator
M-FS-21236 B71-10124 05
- Electrocardiogram signal analyzer
MSC-12710 B75-10269 05
- HEART FUNCTION**
Control system for an artificial heart
LEWIS-11057 B70-10469 05
- Subminiature transducers for measuring forces and deformation of heart muscle
NPO-13423 B75-10051 05
- HEART RATE**
Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
- Biomedical recording system
MSC-13653 B70-10697 05
- Multimode ergometer system
M-FS-21044 B71-10107 05
- Vectorcardiogram
JSC-14427 B73-10401 02
- Cardiotachometer displays heart rate on a beat-to-beat basis
M-FS-20284 B73-10477 05
- Heart-rate pulse-shift detector
ARC-10729 B74-10196 01
- Mobile automatic metabolic analyzer
M-FS-23143 B75-10077 05
- Catheter-tip force transducer for cardiovascular research
NPO-13643 B75-10211 05
- HEAT**
Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
- Restartable heat pipe
ARC-10198 B72-10188 03
- Recovery of recordings from heat damaged magnetic tapes
JSC-14219 B73-10173 02
- Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03
- HEAT BALANCE**
Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
- A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03
- Hydrogen eliminator
ARC-10408 B72-10208 03
- HEAT EXCHANGERS**
Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 B70-10094 04
- Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
- Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
- A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
- The water-cryogen heat exchanger
NUC-11029 B70-10591 03
- Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01
- Compact electric heater
LEWIS-11172 B70-10677 03
- Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03

High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07
Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06
Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 B72-10004 03
Restartable heat pipe
ARC-10198 B72-10188 03
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
Fabrication of cooled, graphite-lined structures
LEWIS-11741 B72-10593 08
Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06
Thermal-powered reciprocating pump
NPO-11417 B72-10723 06
Experimental study of flow distribution with circumferential manifolds
LEWIS-11649 B72-10738 06
Fluid insulation to prevent ice formation in heat exchangers
LEWIS-11959 B73-10028 06
Condensate-removal device for heat exchangers
JSC-14143 B73-10429 06
Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
Solar-energy conversion system provides electrical power and thermal control for life-support systems
M-FS-21628 B73-10524 06
Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03

HEAT FLUX
Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
High intensity heat-pulse source operates without cooling system
ARC-10178 B70-10694 03
Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04
Radial heat flux transformer
NPO-10828 B71-10311 03
Variable boundary II heat conduction
LEWIS-10679 B72-10444 09
Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07

HEAT GENERATION

Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
Exothermic brazing units
M-FS-21435 B71-10467 08

HEAT MEASUREMENT

Development of a silver-zinc battery system
NPO-11444 B70-10718 02
Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03
Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 B72-10154 03
Thermally responsive mechanical actuator
GSFC-11697 B73-10208 04
A heat flow calorimeter
GSFC-11434 B73-10221 03
Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03

HEAT OF DISSOCIATION

Phosphonium chloride for thermal storage
ARC-10572 B72-10422 04

HEAT OF SOLUTION

Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04
Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04

HEAT OF VAPORIZATION

Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
The water-cryogen heat exchanger
NUC-11029 B70-10591 03
Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Fuel-cell heat and mass plate
M-FS-21318 B73-10489 07

HEAT PIPES

Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03
The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 B71-10109 06
Radial heat flux transformer
NPO-10828 B71-10311 03
Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Feedback control of variable conductance heat pipes
ARC-10460 B72-10169 03
Restartable heat pipe
ARC-10198 B72-10188 03

An electrohydrodynamic heat pipe
ARC-10601 B72-10251 03
Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03
Hydrophobic liquid/gas separator for heat pipes
ARC-10656 B72-10549 03
Structural heat pipe
GSFC-11619 B73-10364 06
Fuel-cell heat and mass plate
M-FS-21318 B73-10489 07
Throttleable heat pipe
ARC-10848 B74-10173 03
Heat pipe with hot gas reservoir
ARC-10847 B74-10216 03
Flat device for heat concentration or dispersion
LANGLEY-11699 B74-10291 03
Secondary reflectors for economical sun-tracking energy collection system: A concept
NPO-13580 B75-10210 03
Computer integration of hydrodynamics equations for heat pipes
GSFC-12009 B75-10252 09
Compound heat pipe operates over broad temperature range
M-FS-23329 B75-10313 06

HEAT PUMPS

Manually operated elastomer heat pump
NPO-10677 B70-10270 03
Solar powered absorption cycle heat pump using phase change materials for energy storage
M-FS-21927 B72-10615 06
Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06

HEAT RADIATORS

Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
Improved heat shield/radiator
NPO-11105 B70-10318 03
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04
Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06

HEAT RESISTANT ALLOYS

Directionally solidified superalloy
HQ-10522 B70-10058 04
Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04
Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 B70-10183 04
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04

- Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 B70-10210 04
- High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08
- Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
- High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 B71-10489 04
- Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
- Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04
- Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
- High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04
- Advanced alloy design technique: High temperature cobalt base superalloy
LEWIS-10436 B72-10514 04
- Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 B73-10003 08
- Refractory inserts used to form cooling passages in cast superalloy turbine vanes
LEWIS-11169 B73-10013 08
- Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04
- Braze alloys for high temperature service
LEWIS-11374 B73-10205 06
- Refractory porcelain enamel passive-thermal-control coating for high-temperature superalloys
M-FS-22324 B73-10215 04
- Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04
- A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
- New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04
- Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04
- Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03
- High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04
- Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 B74-10248 04
- High-strength rivet does not require aging
MSC-19301 B75-10044 06
- HEAT SHIELDING**
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
- Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
- Improved heat shield/radiator
NPO-11105 B70-10318 03
- Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09
- Producing graphite with desired properties
NUC-11001 B71-10042 04
- Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
- Fabrication techniques for polybenzimidazole composites
ARC-10724 B73-10269 04
- Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04
- Thin KAPTON polyimide films vacuum formed at high temperature retain their shape at temperatures to 450 K
LEWIS-12412 B75-10016 04
- Reflecting heat shields made of microstructured fused silica
ARC-10949 B75-10144 04
- HEAT SINKS**
Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
- Passive heat transfer control
HQ-10041 B70-10111 03
- A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
- Directional control of radiant heat
LEWIS-90237 B70-10321 03
- Coplanar interconnection module
ERC-10237 B70-10378 01
- Load cell for thermionic converter tests
LEWIS-11068 B70-10470 01
- Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
- Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03
- High density electronic packaging module with improved cooling assembly
MSC-13639 B71-10088 01
- Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03
- Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
- Driver circuit for inductive loads
ARC-10073 B72-10268 01
- Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03
- Freon 21 bearing lubrication and coolant system
HQ-10302 B72-10651 06
- Thermal-powered reciprocating pump
NPO-11417 B72-10723 06
- Increasing terminal strip efficiency at cryogenic temperatures
M-FS-23234 B75-10266 03
- HEAT SOURCES**
The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 B71-10109 06
- Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
- Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03
- Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09
- Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
- Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
- Thermal analog device reduces machining errors
AEC-10080 B72-10237 08
- Low cost uniform heat source
LEWIS-11903 B73-10011 02
- Detector for inspection of fire alarms
GSFC-11600 B73-10128 06
- New method for determining thermophysical properties of test specimens
LANGLEY-11053 B73-10447 04
- HEAT STORAGE**
Phosphonium chloride for thermal storage
ARC-10572 B72-10422 04
- Large-scale solar thermal collector concepts
M-FS-23167 B75-10098 03
- HEAT TOLERANCE**
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
- HEAT TRANSFER**
Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
NPO-11069 B70-10067 09
- Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 B70-10094 04
- Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
- Passive heat transfer control
HQ-10041 B70-10111 03
- Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
- The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 B70-10146 04
- Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
- Manually operated elastomer heat pump
NPO-10677 B70-10270 03
- Design method for adsorption beds
HQ-10269 B70-10294 04
- Thermally induced oscillations in fluid flow
M-FS-20449 B70-10299 03
- Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
- Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07
- Large-capacity pump vaporizer for liquid hydrogen and nitrogen
M-FS-20508 B70-10368 07
- Coplanar interconnection module
ERC-10237 B70-10378 01

Molecular sieves control contamination and insulate in thermal regenerators - A concept
 GSFC-10910 B70-10424 07
 Semiconductor cooling by thin-film thermocouples
 ERC-10149 B70-10495 01
 Improved heat-resistant garments
 MSC-12109 B70-10544 08
 Frost as an insulator
 NUC-11039 B70-10593 03
 Analysis of surface ablation of noncharring materials
 ARC-10223 B70-10615 09
 Lightweight, self-evacuated insulation panels
 LEWIS-90361 B70-10646 03
 Heat-transfer data for hydrogen
 M-FS-18754 B70-10667 03
 Flow characteristics of an air jet impinging on a flat surface
 LEWIS-11129 B70-10670 03
 Performance map of a heat pipe charged with ammonia
 NPO-11454 B70-10726 03
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
 High density electronic packaging module with improved cooling assembly
 MSC-13639 B71-10088 01
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 B71-10096 05
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 Survey of heat transfer to near critical fluids
 LEWIS-11289 B71-10262 03
 Reduction of valve leakage - A concept
 NPO-12003 B71-10315 07
 Solvation agent for disulfide precipitates from inhibited glycol-water solutions
 MSC-13695 B71-10331 04
 Literature review and experimental investigation of heat pipes
 M-FS-21074 B71-10353 03
 Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
 KSC-10518 B71-10364 03
 Steady temperature and density distributions in a gas containing heat sources
 LEWIS-10905 B71-10398 09
 Main tank injection pressurization program
 LEWIS-11368 B72-10069 09
 Closed-cycle power supply for fluidic control systems
 ARC-10480 B72-10163 06
 Restartable heat pipe
 ARC-10198 B72-10188 03
 Thermal analog device reduces machining errors
 AEC-10080 B72-10237 08
 An electrohydrodynamic heat pipe
 ARC-10601 B72-10251 03
 Safe transport of diborane in a dual refrigerant system: A concept
 ARC-10559 B72-10277 03
 Design curve for liquid helium storage vessels
 LEWIS-11498 B72-10286 02

Turbulent mixing film cooling correlation
 LEWIS-11417 B72-10326 07
 Sonic limitations and startup problems of heat pipes
 AEC-10036 B72-10368 03
 Survey of aircraft electrical power systems
 LEWIS-11678 B72-10383 02
 Turbopump thermodynamic cooling
 M-FS-21597 B72-10408 06
 Phosphonium chloride for thermal storage
 ARC-10572 B72-10422 04
 Variable boundary II heat conduction
 LEWIS-10679 B72-10444 09
 Thermal induced flow oscillations in heat exchangers for supercritical fluids
 M-FS-21262 B72-10598 06
 Flexible thermal device
 M-FS-21630 B72-10612 04
 Computer program for afterheat temperature distribution for mobile nuclear power plant
 LEWIS-11693 B72-10634 09
 Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
 LEWIS-11652 B72-10742 04
 Aerotherm charring materials ablation computer program
 LEWIS-11854 B73-10065 09
 Thermal-dynamic modeling study
 LANGLEY-11309 B73-10076 06
 Thin film thermoelectric devices as thermal control coatings: A study
 M-FS-21384 B73-10153 04
 Handbook on thermophysical properties of oxygen
 LEWIS-11962 B73-10187 04
 Solar-energy absorber: Active infrared (IR) trap
 M-FS-22743 B73-10484 06
 Solar-energy absorber: Active infrared (IR) trap without glass
 M-FS-22744 B73-10485 06
 Heat-transfer thermal switch
 LANGLEY-11232 B74-10092 06
 Analysis of orbital heat transfer
 ARC-10844 B74-10116 03
 Electrostatically controlled heat shutter
 NPO-11942 B74-10161 03
 Flat device for heat concentration or dispersion
 LANGLEY-11699 B74-10291 03
 Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
 LEWIS-12558 B75-10244 03
 Computer integration of hydrodynamics equations for heat pipes
 GSFC-12009 B75-10252 09

HEAT TRANSFER COEFFICIENTS
 A simplified method for determining convective heat-transfer coefficients
 LEWIS-11156 B70-10575 03
 Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
 LANGLEY-10940 B72-10115 04
 Boiler for generating high quality vapor
 LEWIS-11345 B72-10135 06
 Improved thermally conducting electron transfer polymers
 GSFC-11304 B72-10291 04

HEAT TRANSMISSION

Power semiconductor device with negative thermal feedback
 HQ-10577 B70-10262 01
 Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04
 Multichamber controllable heat pipe
 ARC-10199 B71-10526 03
 Composite casting demonstration
 M-FS-21668 B72-10266 04
 Solar powered absorption cycle heat pump using phase change materials for energy storage
 M-FS-21927 B72-10615 06
 Thermal-powered reciprocating pump
 NPO-11417 B72-10723 06
 A heat flow calorimeter
 GSFC-11434 B73-10221 03

HEAT TREATMENT

Rene 41 heat treatment electron microscopy
 M-FS-18633 B70-10081 04
 Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
 M-FS-18712 B70-10092 04
 A method for obtaining high ductility in critical areas of aluminum castings
 M-FS-18705 B70-10121 08
 Stress corrosion cracking evaluation of precipitation-hardening stainless steel
 M-FS-20667 B70-10140 04
 Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
 M-FS-14385 B70-10243 04
 Thermal treatment and mechanical properties of aluminum-2021
 M-FS-20559 B70-10369 04
 Improved reinforcement for openings in difficult fabrics
 MSC-13554 B70-10489 08
 Spool for releasing and retracting flat conductor cable
 M-FS-20234 B71-10416 08
 High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
 LEWIS-11229 B71-10489 04
 Fabrication of large ceramic electrolyte disks
 ARC-10320 B72-10202 03
 Plasma calcining of pigment particles for thermal control coatings
 M-FS-21267 B72-10320 04
 High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
 LEWIS-11634 B72-10344 04
 Low cost anti-galling bushings
 LEWIS-11724 B72-10359 08
 High temperature permeameter for measuring magnetic properties
 LEWIS-11609 B72-10443 03
 Advanced alloy design technique: High temperature cobalt base superalloy
 LEWIS-10436 B72-10514 04
 Autoclave heat treatment for prealloyed powder products
 LEWIS-11953 B73-10172 04
 Apparatus for heat treating plastic belts
 NPO-13205 B74-10299 02
 Influence of heat treatment on mechanical properties of 300M steel
 MSC-14792 B75-10271 04

HEATING

Improved process of fabricating ferrite cores for magnetic logic circuits
 LANGLEY-10036 B70-10104 04

Diffusion technique for lithium-doped silicon
 GSFC-10827 B70-10148 01

Electrothermal fracturing of tensile specimens
 NUC-10185 B70-10566 07

Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04

Low-temperature radiation-resistant material for ball-bearing retainers
 NUC-10058 B70-10576 04

The water-cryogen heat exchanger
 NUC-11029 B70-10591 03

Flow characteristics of an air jet impinging on a flat surface
 LEWIS-11129 B70-10670 03

Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08

Strain gage performance above 1033 K
 M-FS-18831 B71-10225 04

Improved smoke generator for low-speed wind tunnels
 LANGLEY-10885 B71-10337 06

Glass tube splitting tool
 MSC-17183 B71-10516 07

Improved synthesis of intermetal compounds
 HQ-10690 B72-10172 04

Restartable heat pipe
 ARC-10198 B72-10188 03

Fabrication of large ceramic electrolyte disks
 ARC-10320 B72-10202 03

Study of high altitude plume impingement
 M-FS-21414 B72-10601 09

Solar residential heating and cooling system
 M-FS-23260 B75-10165 06

Economical solar-heating or cooling system with new solar-energy concentrators
 NPO-13497 B75-10182 03

Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03

Low-cost hot-air solar collector
 M-FS-23272 B75-10301 08

HEATING EQUIPMENT

Split radius-form blocks for tube benders
 MSC-15773 B70-10038 08

Large-capacity pump vaporizer for liquid hydrogen and nitrogen
 M-FS-20508 B70-10368 07

Sorption vacuum trap
 ERC-90051 B70-10449 06

Thermocouple installation in thin-walled tubes
 LEWIS-11222 B70-10655 01

Compact electric heater
 LEWIS-11172 B70-10677 03

Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 B71-10212 08

Portable circuit-interruption indicator
 KSC-10546 B71-10246 02

Improved electron emitter
 LEWIS-10814 B71-10388 03

Preventing oil migration in vacuum systems
 GSFC-11253 B72-10129 04

Feedback control of variable conductance heat pipes
 ARC-10460 B72-10169 03

Superior cryogenic insulation developed
 M-FS-21560 B72-10187 04

An electrohydrodynamic heat pipe
 ARC-10601 B72-10251 03

A valve concept for remote fluid flow control
 M-FS-16097 B72-10400 07

Oxygen plasmas used to synthesize superoxides
 ARC-10686 B72-10570 04

Solar powered absorption cycle heat pump using phase change materials for energy storage
 M-FS-21927 B72-10615 06

Radioisotope heater
 ARC-10791 B74-10051 03

Implementation of a self-controlling heater: A concept
 GSFC-11752 B74-10241 06

Heater improves cold-temperature capacity of silver-cadmium batteries
 GSFC-11913 B75-10071 01

Removal of ice and marine growth from ship surfaces: A concept
 NPO-13658 B75-10282 06

HEIGHT

Gage for measuring coastal erosion and sedimentation
 LANGLEY-10779 B70-10629 01

Remote determination of sea conditions by electromagnetic backscatter measurement
 M-FS-13777 B71-10027 04

HELICAL ANTENNAS

Economical weatherproof helical antenna
 XKS-08485 B70-10016 01

Lightweight S-band helix antenna
 KSC-10392 B70-10538 02

HELICAL FLOW

Single-phase heat transfer improved by helical inserts in tubes
 LEWIS-11063 B70-10362 07

HELICAL WINDINGS

Single-phase heat transfer improved by helical inserts in tubes
 LEWIS-11063 B70-10362 07

An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 B70-10611 03

HELICOPTER DESIGN

Improved method for design of expansion-chamber mufflers with application to operational helicopter
 LANGLEY-11548 B73-10471 03

Control vane for engine exhaust flow
 LANGLEY-11570 B74-10138 06

Design criteria monograph on transmission seals
 LEWIS-12403 B75-10011 07

New design of hingeless helicopter rotor improves stability
 ARC-10807 B75-10132 06

HELICOPTERS

Dynamic valve to supply constant total thrust to two orifice jets
 ARC-10239 B72-10120 07

Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
 LANGLEY-11068 B72-10749 06

New aircraft instrument indicates turbulence intensity
 LANGLEY-11833 B75-10227 03

HELIUM

Quantitative conversion of water to carbon dioxide
 NPO-10731 B70-10013 04

Gas flowmeter
 M-FS-20663 B70-10050 07

A stabilized low-frequency alternating-current electric arc
 LEWIS-10442 B70-10065 01

Atmospheric composition affects heat-and mass-transfer processes
 HQ-10271 B70-10094 04

Proceedings of the Third Southeastern Seminar on Thermal Sciences
 M-FS-20627 B70-10135 03

Ultrasonic propagation in gases at high temperatures
 HQ-10498 B70-10137 03

Prediction of gas leakage of environmental control systems
 HQ-10270 B70-10201 05

Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
 M-FS-18753 B70-10364 04

Effects of hydrogen on ELI titanium alloy
 Ti-5Al-2.5Sn
 M-FS-18815 B70-10366 04

Large-capacity pump vaporizer for liquid hydrogen and nitrogen
 M-FS-20508 B70-10368 07

Laser wavelength selector and output coupler
 ERC-10248 B70-10507 02

Electrothermal fracturing of tensile specimens
 NUC-10185 B70-10566 07

Low temperature uses of helium
 LEWIS-11171 B70-10673 03

Inexpensive high-temperature furnace for thermocouple calibration
 NUC-10372 B71-10046 03

Updated, expanded, fluid properties handbook
 M-FS-21169 B71-10078 04

CSM programs SM RCS propellant quantity gaging systems program
 MSC-17308 B71-10130 09

Submerged gas injector expels cryogenic liquids from tanks
 LEWIS-11231 B71-10219 07

Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 B71-10232 03

Laser vibration analyzer
 XAC-01670 B71-10249 03

Survey of heat transfer to near critical fluids
 LEWIS-11289 B71-10262 03

Dynamic response of viscous compressible fluids in rigid tubes
 M-FS-20542 B71-10269 03

Compressed gas handbook
 KSC-10662 B71-10272 03

Low temperature catalytic ignition of hydrogen and oxygen
 ARC-10492 B72-10127 03

Fluidic ignition detection
 M-FS-21498 B72-10158 06

Cryogenic gel flow viscometer
 ARC-10523 B72-10180 03

Comparison of catalyst activity
 ARC-10493 B72-10201 04

- Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03
- Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03
- Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 B72-10249 04
- Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
- A sensitive image intensifier which uses inert gas
LRL-10024 B72-10312 03
- Helium leak measurements using CO₂ as a carrier
M-FS-21742 B72-10354 03
- Leak decay method of helium bombardment leak testing
M-FS-24109 B72-10381 06
- Proposed semiconductor film improvement
HQ-10685 B72-10438 04
- Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02
- Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
- Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- Helium window for shock-tube monochromators
NPO-11852 B72-10556 03
- SRC seal testing
M-FS-22426 B73-10199 01
- Ultrastructural alteration of mouse lung by prolonged exposure to mixtures of helium and oxygen
ARC-10929 B75-10061 05
- HELIUM-NEON LASERS**
- Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03
- Laser addressed holographic memory system
M-FS-22565 B73-10155 03
- Laser-scanning techniques for rapid ballistics identification
NPO-11861 B74-10102 03
- HELMETS**
- Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
- HEMISPHERICAL SHELLS**
- Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
- Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
- Modular construction provides large volume storage facility in minimum space
M-FS-13568 B71-10354 08
- HEMODYNAMIC RESPONSES**
- A system for automatic analysis of blood pressure data for digital computer entry
LEWIS-11751 B72-10632 05
- HEMODYNAMICS**
- Small, low cost, artificial kidney
AEC-10011 B72-10371 05
- HEMOGLOBIN**
- Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
- Improved design of electrophoretic equipment for rapid sickle-cell-anemia screening
GSFC-11794 B73-10225 02
- HEMOLYSIS**
- Improved design of electrophoretic equipment for rapid sickle-cell-anemia screening
GSFC-11794 B73-10225 02
- HEPARINS**
- Covalent bonding of polycations to small polymeric particles
NPO-13487 B75-10327 04
- HERMETIC SEALS**
- High-temperature electric stator
LEWIS-10889 B70-10459 01
- Glass-to-metal bonding process improves stability and performance of semiconductor devices
ERC-10264 B70-10477 01
- Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
- Development of a silver-zinc battery system
NPO-11444 B70-10718 02
- Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01
- Hermetically sealed motion transmitter
MSC-17348 B71-10328 07
- Hermetic isolation valves
ARC-10505 B72-10013 06
- Space suit may have orthotic applications
ARC-10275 B72-10297 05
- Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
M-FS-21924 B72-10316 01
- Leak decay method of helium bombardment leak testing
M-FS-24109 B72-10381 06
- Improved lip seal for rotating shafts
LEWIS-11602 B72-10672 07
- High torque bellows seal rotary drive
LEWIS-11813 B72-10681 07
- SRC seal testing
M-FS-22426 B73-10199 01
- Nondestructive leak testing
LANGLEY-11561 B73-10464 06
- Nongassing NiCd battery cell
NPO-11853 B75-10174 04
- HETEROCYCLIC COMPOUNDS**
- New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04
- Liquid-hydrogen/nuclear-radiation resistant seals
M-FS-21364 B71-10340 03
- Water purification by reverse osmosis using heterocyclic polymer membranes
LANGLEY-10514 B72-10230 04
- Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
- HETERODYNING**
- High-resolution spectral analysis
NPO-10748 B70-10039 01
- High-sensitivity receiver for CO₂ laser communications
GSFC-11455 B73-10223 02
- Carrier suppression device for a heterodyne gas analyzer
ARC-10785 B73-10381 03
- HETEROGENEITY**
- Evaluating foam heterogeneity
AEC-10046 B72-10365 04
- HEWLETT-PACKARD COMPUTERS**
- Pressure drop and pumping power for fluid flow through round tubes
M-FS-24172 B73-10186 09
- HEXAGONAL CELLS**
- Fiberglass honeycomb elements formed quickly and cheaply
LANGLEY-10125 B70-10342 08
- HEXAGONS**
- Embossed metal diaphragm has two-way stretch
NPO-11635 B73-10298 08
- HIERARCHIES**
- MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
- HIGH ALTITUDE**
- Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 B70-10241 08
- Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
- Study of high altitude plume impingement
M-FS-21414 B72-10601 09
- HIGH ALTITUDE BALLOONS**
- Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03
- Balloon-borne package temperature controller
GSFC-11620 B73-10192 03
- Torque control system
GSFC-11077 B75-10085 06
- HIGH CURRENT**
- Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
- Solid state bistable power switch
ERC-10290 B70-10383 01
- New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
- HIGH ENERGY ELECTRONS**
- An empirical relationship for the penetration of 1 to 3 MeV electrons
LEWIS-11495 B72-10144 04
- HIGH ENERGY INTERACTIONS**
- Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06
- HIGH FREQUENCIES**
- Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
- High-resolution spectral analysis
NPO-10748 B70-10039 01
- Ranging code processor
NPO-10066 B70-10060 02
- Design procedure for improved active filters
M-FS-20445 B70-10238 02
- High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
- A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
- Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03

- Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
- High noise immunity one shot
ARC-10137 B72-10047 01
- Coaxial inverted geometry epitaxial transistor
ARC-10330 B72-10056 01
- Industrial filter bags cleaned by high-frequency vibration: A concept
M-FS-24445 B73-10398 06
- HIGH GAIN**
- Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
- Reduction of background in an X-ray proportional counter
HQ-10253 B70-10169 02
- Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
- Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 B71-10069 01
- Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01
- Bidirectional zoom antenna
GSFC-11862 B74-10257 01
- HIGH GRAVITY ENVIRONMENTS**
- Cine recording ophthalmoscope
ARC-10399 B72-10189 05
- HIGH PASS FILTERS**
- Radio frequency baseband recording technique
HQ-10317 B70-10069 02
- Design procedure for improved active filters
M-FS-20445 B70-10238 02
- Electronic high pass filter
LEWIS-11600 B74-10083 02
- HIGH POLYMERS**
- Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
- HIGH PRESSURE**
- High pressure flow-rate switch
NPO-10722 B70-10028 07
- Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
- A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 B70-10287 07
- Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06
- Large-capacity pump vaporizer for liquid hydrogen and nitrogen
M-FS-20508 B70-10368 07
- Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
- Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
- Resonance tube igniter
LEWIS-11219 B70-10618 04
- Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
- Compressed gas handbook
KSC-10662 B71-10272 03
- Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04
- Improved plasma accelerator
ARC-10109 B71-10454 03
- High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 B71-10489 04
- Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
- Positive fast sealing union connections
LEWIS-11290 B72-10133 06
- Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03
- Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
- Determination of impact sensitivity of materials at high pressures
MSC-13700 B72-10216 07
- Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07
- Baffle to confine glow discharge in ion pump
M-FS-21575 B72-10324 03
- High-speed, self-acting shaft seal (circumferential type)
LEWIS-11274 B72-10447 07
- High-volume pressure relief valve
KSC-10707 B72-10536 07
- Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- Light-weight spherical submergence vessel
ARC-10838 B74-10114 08
- Full-flow fluid filter
NPO-13118 B74-10277 02
- HIGH PRESSURE OXYGEN**
- Water cavity degasser for electrolysis cells
ARC-10244 B72-10246 03
- Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure
M-FS-21930 B72-10476 06
- Transfer of gaseous oxygen from high-pressure containers and the Joule-Thomson inversion
KSC-10721 B73-10483 04
- HIGH RESISTANCE**
- Time-adjusted variable resistor
NPO-11306 B72-10116 01
- HIGH RESOLUTION**
- High-resolution spectral analysis
NPO-10748 B70-10039 01
- Ranging code processor
NPO-10066 B70-10060 02
- Improved solid state electron-charge-storage device
HQ-10152 B70-10074 01
- Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
- Diffusion filter eliminates fringe effects of coherent laser light source
NPO-10417 B70-10226 03
- Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
- Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03
- Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
- Ultraviolet interferometer
HQ-10546 B71-10026 03
- Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03
- Solar cell power scanner
LEWIS-11280 B71-10223 02
- Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
- Improved charged-particle analyzer - A concept
XAC-05506 B71-10283 03
- A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 B71-10439 02
- A liquid radiation detector with high spatial resolution
MSC-13965 B72-10034 03
- Projections of scan patterns on human retina
ARC-10181 B72-10193 05
- Optical device for producing color line scan display from monochrome oscilloscope traces
LANGLEY-10896 B72-10375 03
- Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 B72-10606 09
- HIGH SPEED**
- Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
HQ-10389 B70-10108 03
- Holographic photography of high velocity particles
ERC-10318 B70-10371 03
- Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06
- Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
LEWIS-10856 B70-10468 07
- Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
- Multiple shutters for a stereoscopic camera
MSC-13507 B71-10065 03
- Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
- A low-altitude satellite interaction study
GSFC-11384 B71-10499 09
- Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
- Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09
- HIGH SPEED CAMERAS**
- A real time moving-scene holographic camera
M-FS-21087 B73-10421 03
- HIGH STRENGTH**
- Unidirectional composite stiffening
HQ-10266 B70-10054 04
- A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
- Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04
- Specimen for high-temperature tensile tests
ARC-10531 B72-10028 04

- High strength high modulus ceramic fiber
M-FS-21266 872-10592 04
Diamine curing agents for polyurethanes
LANGLEY-11829 875-10261 08
- HIGH STRENGTH ALLOYS**
Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 870-10183 04
Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 871-10369 08
High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 872-10344 04
Dispersion-strengthened chromium alloy
LEWIS-10982 872-10378 04
Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 873-10003 08
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 874-10002 04
New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 874-10003 04
Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 874-10081 03
High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 874-10082 04
High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 874-10265 04
High strength forgeable tantalum base alloy
LEWIS-11386 875-10023 04
High-strength rivet does not require aging
MSC-19301 875-10044 06
Aluminum alloys with improved strength
M-FS-23239 875-10200 04
- HIGH TEMPERATURE**
A program for computing shock-tube gas dynamic properties
NPO-11068 870-10133 09
Ultrasonic propagation in gases at high temperatures
HQ-10498 870-10137 03
The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 870-10146 04
Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 870-10183 04
Heat-resistant pressure probe with high-frequency response
NPO-11292 870-10252 06
Thermally cascaded thermoelectric generator
NPO-10753 870-10280 03
Swirl-can combustor segment
LEWIS-11082 870-10322 07
Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 870-10335 01
High temperature ion source
ERC-10197 870-10379 03
- Thin film devices used as oxygen partial pressure sensors
XLA-06473 870-10419 04
Sorption vacuum trap
ERC-90051 870-10449 06
Resonance tube igniter
LEWIS-11219 870-10618 04
Low-cost high-temperature brazing material
LEWIS-11209 870-10672 04
Improved method for cladding the inside of metal tubes
LEWIS-11174 870-10723 08
High-temperature pump-motor assembly
LEWIS-10256 871-10100 07
Improved high-temperature metal-sheathed cables
NUC-10413 871-10102 01
Improved fire-resistant coatings
GSFC-10072 871-10198 04
Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 871-10253 08
Improved brazing technique for pyrolytic graphite
NPO-12026 871-10293 08
Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 871-10303 04
Literature review and experimental investigation of heat pipes
M-FS-21074 871-10353 03
High-strength large-diameter carbon-base fibers
LEWIS-11167 871-10403 04
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 871-10405 06
High temperature autoclave vacuum seals
M-FS-21131 871-10433 08
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 871-10442 04
High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 871-10489 04
Isotropic pyrolytic carbons
ARC-10532 872-10029 04
Aluminum foil interconnects for solar cell panels
ARC-10374 872-10058 08
Introduction of lithium into the front surface of solar cells
NPO-11404 872-10086 02
High-temperature ceramic-to-ceramic seals
ARC-10319 872-10199 04
Fabrication of large ceramic electrolyte disks
ARC-10320 872-10202 03
Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 872-10262 04
Oxygen reclamation with solid oxide electrolytes
ARC-10487 872-10273 03
Devolatilization of polymer resins
GSFC-11358 872-10280 04
Inorganic glass ceramic slip rings
M-FS-20711 872-10313 04
- Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 872-10320 04
High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 872-10344 04
Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 872-10454 04
Watertight low-cost electrical connector
LEWIS-11552 872-10506 01
High temperature gallium phosphide rectifiers
LEWIS-11804 872-10673 01
Shutoff and throttling valve
NPO-11951 874-10105 07
Light-weight spherical submergence vessel
ARC-10838 874-10114 08
Pressure application technique for high-temperature composite fabrication
LANGLEY-11601 874-10141 08
- HIGH TEMPERATURE ENVIRONMENTS**
Dry-frictional shock absorber
NPO-11212 870-10040 07
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 870-10330 04
Heat-barrier coatings for combustion chambers
M-FS-18618 870-10363 07
High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 870-10429 08
High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 870-10430 08
High-temperature electric stator
LEWIS-10889 870-10459 01
High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 870-10564 03
Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 870-10569 01
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 870-10580 08
High-strength magnetic materials
LEWIS-10697 870-10596 03
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 870-10634 04
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 870-10674 04
High temperature circuit breaker
LEWIS-90265 870-10721 01
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 871-10046 03
Strain gage performance above 1033 K
M-FS-18831 871-10225 04
Improved insulating materials effective at extremely high temperatures
NPO-12067 871-10289 04
Granular two-phase insulation systems
NPO-12068 871-10290 04
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 871-10493 07
High-temperature, long-life thyatron
LEWIS-11327 872-10134 01

- Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03
- Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
- High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04
- High temperature permeameter for measuring magnetic properties
LEWIS-11609 B72-10443 03
- Advanced alloy design technique: High temperature cobalt base superalloy
LEWIS-10436 B72-10514 04
- Fabrication of cooled, graphite-lined structures
LEWIS-11741 B72-10593 08
- Integrated structure vacuum tube: A Concept
ARC-10445 B74-10110 01
- Laser-actuated mechanical device
NPO-13105 B74-10166 03
- High-performance Schottky diodes endure high temperatures
M-FS-23184 B75-10101 01
- Silicon nitride used as a rolling-element bearing material
LEWIS-12447 B75-10134 06
- Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06
- A new high temperature noble metal thermocouple pairing
LEWIS-12545 B75-10245 03
- Compound heat pipe operates over broad temperature range
M-FS-23329 B75-10313 06
- HIGH TEMPERATURE FLUIDS**
- The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 B71-10109 06
- HIGH TEMPERATURE GASES**
- A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
- Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
- Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
- Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03
- HIGH TEMPERATURE LUBRICANTS**
- High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
- Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
- Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
- Long life, high speed, thrust-load ball bearings
LEWIS-12269 B75-10022 06
- HIGH TEMPERATURE PLASMAS**
- Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03
- HIGH TEMPERATURE RESEARCH**
- High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 B70-10569 01
- Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
- An improved gas extraction furnace
MSC-14138 B72-10544 04
- Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04
- A flexible all-temperature pressure vessel
M-FS-19196 B73-10158 03
- HIGH TEMPERATURE TESTS**
- Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01
- Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01
- Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03
- Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
- Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
- Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
- Specimen for high-temperature tensile tests
ARC-10531 B72-10028 04
- New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
- A protective coating for stainless steel
LEWIS-11267 B72-10256 04
- Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04
- Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04
- High-temperature-radiation analyzer
ARC-10565 B73-10017 03
- High-temperature tensile tester for ceramics
ARC-10822 B74-10244 04
- Apparatus for study of plasmas at elevated temperatures
ARC-10958 B75-10285 03
- HIGH VACUUM**
- Dry-frictional shock absorber
NPO-11212 B70-10040 07
- Flat conductor cable connector with contact separation seal
M-FS-20757 B70-10387 01
- Sorption vacuum trap
ERC-90051 B70-10449 06
- High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03
- Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
- Ultrathin gate valve for high vacuum operation
GSFC-11028 B71-10412 07
- Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
- Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 B72-10406 04
- Research on bearing lubricants for use in a high vacuum
M-FS-22119 B72-10469 04
- Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04
- Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 B75-10185 03
- HIGH VOLTAGES**
- Solid state bistable power switch
ERC-10290 B70-10383 01
- Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01
- High voltage lightning grounding device
LEWIS-11282 B71-10136 01
- High voltage protection network
ARC-10197 B72-10119 02
- Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01
- High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04
- New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
- High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04
- Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01
- Very high voltage latching relay
LEWIS-12265 B74-10079 01
- High-voltage distributors
GSFC-11849 B74-10242 01
- High-power ac/dc variable load simulator
MSC-14788 B75-10108 02
- Schottky barrier solar cell promises improved efficiency
NPO-13482 B75-10125 03
- High-voltage stepping supply with fast settling time
GSFC-11844 B75-10191 02
- HIGHWAYS**
- Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
- HILSCH TUBES**
- Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- HISTOGRAMS**
- Tolerance analysis program
MSC-17487 B71-10389 09
- HOLDERS**
- Spinarc gas tungsten arc torch holder
MSC-15646 B70-10041 08

- Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01
Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
Fixture for plating stripped conductors of flat conductor cables /FCC/
M-FS-20122 B70-10719 08
Vise to hold bones or other irregular objects
ARC-10679 B72-10569 07
Tissue holder for experimental and Demonstration Surgery
LEWIS-11755 B72-10630 05
A concept for universal pliers
KSC-10768 B72-10685 07
Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05
Finger recording electrode system for electrical impedance plethysmograph
ARC-10816 B74-10172 05
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
- HOLE DISTRIBUTION (MECHANICS)**
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07
Survey of information concerning large diameter deep hole drilling
AEC-10051 B72-10238 08
- HOLES**
Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07
- HOLOGRAPHY**
Holographic stress analysis
M-FS-20687 B70-10123 01
The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03
Finite fringe hologram
HQ-10347 B70-10271 03
Stellar spectrum classifier
MSC-13450 B70-10319 03
Variables in turbine erosion
M-FS-18677 B70-10325 03
Holographic photography of high velocity particles
ERC-10318 B70-10371 03
Multipass holographic interferometer improves image resolution
HQ-10499 B70-10426 03
Holographic analysis of thin films
M-FS-20823 B70-10654 08
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Vibration testing and analysis using holography
M-FS-21050 B71-10352 03
Improving laser beam coherence - A concept
ARC-10417 B71-10527 03
- Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03
Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 B72-10209 03
Hybrid holographic system
M-FS-20074 B72-10260 03
Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03
Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 B72-10440 03
Photoemissive coating
M-FS-22003 B72-10638 08
Optimal read/write memory system components
M-FS-22044 B72-10697 01
Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03
Vibration measurement by pulse differential holographic interferometry
LANGLEY-11092 B73-10075 03
Holographic testing with a double reference beam
JSC-17959 B73-10086 03
A generalized approach to computer synthesis of digital holograms
M-FS-21973 B73-10101 09
Holographic nondestructive testing of laminates
JSC-19107 B73-10108 04
Laser addressed holographic memory system
M-FS-22565 B73-10155 03
An improved holographic recording medium
M-FS-22532 B73-10166 09
Bonded panel, flaw detection standards
LANGLEY-11399 B73-10240 06
Hologram recording tubes
M-FS-22590 B73-10330 03
Coherence-length extender
M-FS-22434 B73-10399 03
A real time moving-scene holographic camera
M-FS-21087 B73-10421 03
Laser-actuated holographic storage device
M-FS-22768 B73-10423 03
Motion compensator for holographic motion picture camera
M-FS-22517 B73-10434 03
Photography of random motion with a holographic camera
M-FS-22537 B73-10435 03
Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06
Acoustic-optic deflector telescope
M-FS-23107 B74-10293 03
Holographic direct-vision spectroscopy
LANGLEY-11750 B75-10090 03
Dichromated-gelatin hologram process for improved optical quality
M-FS-23170 B75-10099 03
Page composer to translate binary electrical data to optical form
M-FS-22589 B75-10161 02
Read-only optical storage medium
M-FS-23169 B75-10305 03
Optical-noise suppression unit: A concept
MSC-12640 B75-10315 03
- HOMEOSTASIS**
Rapid evaluation of reverse-osmosis membranes
ARC-10659 B72-10413 04
- HOMODYNE RECEPTION**
COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
- HOMOGENEITY**
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08
Fabrication of large ceramic electrolyte disks
ARC-10320 B72-10202 03
Low-resistivity homogeneous elastomers
NPO-11881 B73-10349 04
- HOMOGENIZING**
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
- HONEYCOMB CORES**
Repair of brazed steel honeycomb-sandwich panels with vertical pins only
MSC-15831 B70-10624 08
Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06
Radial honeycomb core
ARC-10727 B73-10340 08
Adhesive coating eliminated in new honeycomb-core fabrication process
LANGLEY-11134 B73-10439 08
Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06
- HONEYCOMB STRUCTURES**
Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
Fiberglass honeycomb elements formed quickly and cheaply
LANGLEY-10125 B70-10342 08
Fabricating subscale components for application to full-scale parts
M-FS-20805 B70-10390 07
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Lightweight graphite/polyimide panels
JSC-14375 B73-10121 04
New concept in brazing metallic honeycomb panels
LANGLEY-10957 B73-10358 08
Corrugated battery electrode
GSFC-11368 B73-10515 01
Honeycomb battery plaque
GSFC-11367 B73-10519 01
Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06

- Noise suppressor
LANGLEY-11141 874-10261 03
- HOOKS**
Computer design of extension springs
M-FS-24073 871-10473 09
- HOOPS**
Biaxial prestressing of brittle materials
M-FS-20272 870-10316 04
Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 870-10394 06
- HOPPERS**
Distribution and metering system for soil samples
ARC-10429 871-10481 07
- HORIZON**
Compensating subreflector for two-reflector antennas: A concept
NPO-11503 872-10093 06
- HORN ANTENNAS**
Dual-frequency feed-horn antenna
GSFC-10820 871-10056 02
Composite antenna feed system operates from VHF to X-band
GSFC-11046 871-10410 02
Acoustic spectral analysis and testing techniques
NPO-11554 872-10341 03
Horn antenna with v-shaped corrugated surface
LANGLEY-11112 874-10260 01
Highly-efficient horn/reflector antenna
NPO-13568 875-10330 01
- HORNS**
Synthesis of diamonds
M-FS-20698 870-10513 08
Acoustic spectral analysis and testing techniques
NPO-11554 872-10341 03
- HOSES**
Self-sealing, easily purged quick-disconnect hose coupling
MSC-17009 870-10699 07
Predicting vibrational failure of flexible ducting
M-FS-16750 871-10150 06
Limited life item management
M-FS-24020 871-10196 06
Positive fast sealing union connections
LEWIS-11290 872-10133 06
Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 872-10407 06
Low-cost, portable fire hose tester
LEWIS-12365 875-10003 06
- HOSPITALS**
Combination syringe provides air-free blood samples
MSC-12320 870-10545 05
Hand-held photomicroscopy system
ARC-10468 872-10190 03
Ultrasonic bone densitometer
M-FS-20994 872-10450 05
Intensive care alarm system
GSFC-11377 873-10126 02
New system for bathing bedridden patients
ARC-10745 873-10272 05
Vectorcardiogram
JSC-14427 873-10401 02
- HOT CATHODES**
Estimating sensitivity of vacuum gages
LEWIS-11007 870-10099 03
- HOT PRESSING**
Dispersion-strengthened chromium alloy
LEWIS-10982 872-10378 04
- Improved diffusion welding and roll welding of titanium alloys
LEWIS-11852 873-10005 08
- HOT-WIRE ANEMOMETERS**
Oscillating hot-wire anemometer
NPO-11634 872-10609 02
- HOT-WIRE FLOWMETERS**
Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 871-10224 02
- HOUSINGS**
Fuse and switch functions combined within a single housing
HQ-10497 870-10003 01
Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 870-10653 07
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 871-10083 07
Unified hatch system
MSC-15813 871-10095 06
Multimode ergometer system
M-FS-21044 871-10107 05
Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 871-10173 07
Improved reversible coulometer cell
SAN-10051 871-10176 02
Inertia diaphragm pressure transducer
XAC-2981 871-10200 05
Portable lightweight bandsaw
M-FS-16927 871-10237 07
Hot tap thermowell installation
MSC-12427 871-10302 07
Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 871-10337 06
Discrete-component S-band power amplifier
GSFC-11248 871-10365 01
Application of calibration masks to TV vidicon tube
KSC-10589 871-10404 02
Clocking connector replaces adapter cables
M-FS-14778 871-10428 01
Eye point-of-regard system
ARC-10360 871-10476 05
Foldable patterns form construction blocks
MSC-13860 871-10523 08
An improved aesthesiometer
MSC-13609 872-10032 05
Solenoid-operated swing-check valve
XAC-10048 872-10037 06
Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 872-10053 03
Low-friction ball-and-socket
NPO-11348 872-10081 08
Squib-actuated disconnect device
NPO-11544 872-10097 06
Hydraulic valve lifter remover
M-FS-21377 872-10110 07
Design criteria monograph for valve components
LEWIS-12327 874-10087 06
- HOVERING**
Lift distribution in a rectangular jet
ARC-10424 871-10030 09
- HUBS**
Compensating subreflector for two-reflector antennas: A concept
NPO-11503 872-10093 06
- HUGONIOT EQUATION OF STATE**
A program for computing shock-tube gas dynamic properties
NPO-11068 870-10133 09
- HUMAN BEINGS**
Metabolic simulation chamber
HQ-10776 872-10658 05
An efficient prebreathing apparatus for humans during decompression
MSC-14151 872-10690 05
- HUMAN BODY**
Drive mechanism for production of simulated human breath
HQ-10777 872-10659 05
Temperature and humidity control of simulated human breath
HQ-10778 872-10660 05
Simulated breath waveform control
HQ-10779 872-10661 05
Implantable drug therapy device: A concept
NPO-11934 872-10708 05
Gate protective device for SOS array
HQ-10745 872-10755 01
Mathematical model for predicting human vertebral fracture
ARC-10691 873-10033 05
- HUMAN CENTRIFUGES**
Cine recording ophthalmoscope
ARC-10399 872-10189 05
- HUMAN FACTORS ENGINEERING**
Reliability Analysis Model
M-FS-14513 870-10614 09
Space-suit carbon dioxide absorption system: A concept
ARC-10546 872-10168 05
Improved temperature control of liquid cooling garments
MSC-13917 872-10281 05
Tool carrier
M-FS-21469 872-10319 07
A continuous physiological data collector
M-FS-20835 872-10402 05
Restraint and locomotion aid
ARC-10153 872-10558 06
A four-panel enclosure protects from explosion
M-FS-21847 872-10613 06
Automation of Bosch reaction for CO2 reduction
M-FS-21674 872-10666 04
Seat belt restraint system
ARC-10519 872-10692 06
Improved electrodes for skin contacts
M-FS-21926 872-10698 05
Improved measurement of depth perception
M-FS-14133 872-10730 05
Integral aircraft passenger seat
ARC-10799 873-10495 05
Safety management of a complex R&D ground operating system
LEWIS-12559 875-10241 07
- HUMAN PERFORMANCE**
Human performance measuring device
LANGLEY-10679 870-10619 05
Simulated breath waveform control
HQ-10779 872-10661 05
Improved measurement of depth perception
M-FS-14133 872-10730 05
- HUMAN REACTIONS**
New reaction tester accurate within 56 microseconds
MSC-13604 872-10031 05

- An improved aesthesiometer
MSC-13609 B72-10032 05
Loudness (annoyance), prediction
procedure for steady sounds
LEWIS-11761 B72-10579 05
System for measuring passenger reaction
to transportation-vehicle vibration
LANGLEY-11353 B73-10436 05
Hand tremor and activity sensor
ARC-10849 B75-10057 05
- HUMAN TOLERANCES**
A study of radiation environment in space
and its biological effects
HQ-10798 B72-10662 03
Analytic model for assessing thermal
performance of SCUBA divers
ARC-10927 B75-10029 09
- HUMAN WASTES**
Improved apparatus for continuous
culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
Small, low cost, artificial kidney
AEC-10011 B72-10371 05
- HUMIDITY**
Atmospheric composition affects heat-
and mass-transfer processes
HQ-10271 B70-10094 04
Improved cover for cadmium sulfide solar
cells
LEWIS-11003 B70-10584 01
Frost as an insulator
NUC-11039 B70-10593 03
Psychrometric chart for physiological
research
ARC-10394 B71-10470 03
Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
Humidity resistant solar cell contacts
HQ-10674 B72-10517 04
Breathing-metabolic simulator
HQ-10766 B72-10657 05
Temperature and humidity control of
simulated human breath
HQ-10778 B72-10660 05
A new method for the determination of
thin film porosity
HQ-10673 B73-10286 01
- HUMIDITY MEASUREMENT**
Fluidic device for measuring constituent
masses of a flowing binary gas mixture
LEWIS-11995 B73-10230 06
Quartz crystal microbalances to measure
wind velocity and air humidity
NPO-13462 B75-10124 03
- HYBRID CIRCUITS**
High voltage solid-state relay
LEWIS-12096 B74-10006 01
A hybrid general-purpose bit
synchronizer
MSC-14330 B75-10169 02
Quality control of microelectronic wire
bonds
M-FS-23327 B75-10312 01
- HYBRID COMPUTERS**
Error compensation for hybrid-computer
solution of linear differential equations
ERC-10262 B70-10446 09
Global search algorithm for optimal
control
ARC-10359 B70-10637 09
Stored program concept for analog
computers
M-FS-20874 B71-10240 09
Hybrid computer techniques for solving
partial differential equations
M-FS-21386 B71-10424 09
- Errors in hybrid computers
M-FS-21289 B72-10141 02
An improved data transfer and storage
technique for hybrid computation
M-FS-22043 B72-10680 02
- HYDRATION**
Compact apparatus for photogeneration
of hydrated electrons
ARG-10487 B70-10036 03
Quick, easy to prepare freeze-dried
soups
MSC-14003 B72-10017 05
- HYDRAULIC CONTROL**
Hydraulically operated tilt table
M-FS-21047 B71-10024 05
System accurately controls pressure in
cryogenic tanks
LEWIS-11329 B71-10118 03
Liquid-fuel valve with precise throttling
control
NPO-10808 B71-10449 07
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Gyro spring augmentation system
ARC-10496 B72-10010 06
Integrated monopropellant thruster
NPO-12004 B72-10502 06
Mechanical coupling for high cyclic
loading
LEWIS-11690 B74-10001 06
Braking action of wheeled vehicles is
controlled automatically during
minimum-distance stops
LANGLEY-11897 B75-10264 06
- HYDRAULIC EQUIPMENT**
High pressure flow-rate switch
NPO-10722 B70-10028 07
Dry-frictional shock absorber
NPO-11212 B70-10040 07
Prediction of faults in components of
machinery in motion
GSFC-10801 B70-10116 06
Performance-limit criteria for the design
of fast-response servo-actuation systems
LEWIS-11022 B70-10152 02
Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
Hydraulic brake safety valve
M-FS-16444 B70-10207 07
Inexpensive tamper proof safety relief
valve
KSC-10470 B70-10320 07
Small hydraulic turbine drives
LEWIS-11064 B70-10416 07
Artificial-feedback system
GSFC-10324 B70-10421 02
Elimination of gases and contamination
from water
KSC-10502 B70-10456 05
Pilot-booster control valve
M-FS-20635 B70-10558 07
Redundant electronic circuit provides
fail-safe control
NUC-10389 B70-10565 01
Deadweight calibration of pressure gages
without contamination
M-FS-18690 B70-10586 07
Bidirectional flow meter
M-FS-18737 B70-10589 07
Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
Determination of gas volume trapped in
a closed fluid system
MSC-15685 B71-10094 06
Hydraulic actuator motion limiter ensures
operator safety
ARC-10131 B71-10233 07
- Tilt table for ergometers and other
biomedical devices
M-FS-21010 B71-10241 05
Hydraulic expansion process shapes large
metal sheets
MSC-12432 B71-10511 07
Anemometer calibrator
M-FS-21424 B71-10519 03
Gyro spring augmentation system
ARC-10496 B72-10010 06
Hydraulic valve lifter remover
M-FS-21377 B72-10110 07
Survey of aircraft electrical power
systems
LEWIS-11678 B72-10383 02
Dry ice plug for hydraulic and pneumatic
pipe flushing
MSC-12548 B72-10496 06
Self-aligning, low-pressure sealing
poppet valve
MSC-17745 B72-10538 07
High pressure liquid gas pump
MSC-14087 B72-10590 06
Fill and vent quick disconnect
M-FS-21822 B72-10645 07
Automatic water inventory, collecting,
and dispensing unit
LANGLEY-11071 B72-10663 06
A shut-off valve for flexible tubing
M-FS-21731 B72-10687 07
Concentric-seating poppet
NPO-11658 B72-10704 06
Fail-safe bidirectional valve driver
NPO-11958 B73-10450 07
Powered fire nozzle for fast penetration
of structures: A concept
MSC-19528 B75-10111 06
- HYDRAULIC FLUIDS**
Hydraulic characteristics of flow through
miniature slits
NPO-11354 B70-10400 07
Deadweight calibration of pressure gages
without contamination
M-FS-18690 B70-10586 07
Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
High-temperature, long-life polyimide
seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Resin additive improves performance of
high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
Hydraulic expansion process shapes large
metal sheets
MSC-12432 B71-10511 07
Gyro spring augmentation system
ARC-10496 B72-10010 06
Lubrication handbook
M-FS-22326 B73-10062 04
- HYDRAULICS**
Removal of flowmeter bearings from
blind cavities
M-FS-18713 B70-10227 06
Fast-acting, four-way slide valve
M-FS-18608 B70-10228 07
Single-phase heat transfer improved by
helical inserts in tubes
LEWIS-11063 B70-10362 07
- HYDRAZINES**
Antipollution system to remove nitrogen
dioxide gas
LEWIS-11297 B71-10393 04
Propellant-powered actuator for gas
generators
ARC-10484 B72-10008 03
Fluidic pressure regulators
ARC-10474 B72-10162 06

- Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
- Rubber composition compatible with hydrazine
NPO-11440 B73-10019 04
- High-power CW laser using hydrogen-fluorine reaction
NPO-13623 B75-10183 03
- HYDROCARBON COMBUSTION**
Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
- HYDROCARBONS**
Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
- Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
- Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
- Improved thermal paint formulation
M-FS-14706 B71-10180 03
- A new metalation complex for organic synthesis and polymerization reactions
NPO-10313 B71-10210 04
- High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04
- Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04
- Hydrogen eliminator
ARC-10408 B72-10208 03
- Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- New type of trifunctional alcohol
NPO-10714 B72-10553 04
- Method for estimating solubility parameter
NPO-11647 B73-10022 04
- An improved holographic recording medium
M-FS-22532 B73-10166 09
- HYDROCHLORIC ACID**
Improved process for synthesizing anilinosilane compounds
M-FS-14948 B70-10105 04
- Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04
- P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
- Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 B72-10006 05
- HYDROCHLORIDES**
Improved process for synthesizing anilinosilane compounds
M-FS-14948 B70-10105 04
- HYDRODYNAMIC EQUATIONS**
Water impact loads
M-FS-21955 B72-10621 09
- HYDRODYNAMICS**
Improved electron-beam welding technique
M-FS-20714 B70-10127 08
- Technique for improving hydrodynamic gyro bearings
M-FS-20764 B70-10301 06
- Variables in turbine erosion
M-FS-18677 B70-10325 03
- Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
- Improved electron beam welding technique
M-FS-20753 B70-10412 08
- Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08
- Computer program for calculating water and steam properties
LEWIS-12519 B75-10187 09
- Computer integration of hydrodynamics equations for heat pipes
GSFC-12009 B75-10252 09
- HYDROFLUORIC ACID**
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
- Determination of nitrogen in titanium nitride
LEWIS-11046 B70-10588 04
- Welded polypropylene liners for large descaling tanks
M-FS-18711 B71-10012 07
- Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03
- HYDROFOILS**
Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03
- HYDROGEN**
Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
- Gas flowmeter
M-FS-20663 B70-10050 07
- The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 B70-10146 04
- Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
- Ohmic diode
HQ-10534 B70-10200 01
- Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04
- Use of thermodynamic properties of metal-gas systems as low-pressure standards
LANGLEY-10452 B70-10223 03
- Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
- An explosion-proof battery case
MSC-12335 B70-10304 01
- Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 B70-10333 04
- Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
M-FS-18753 B70-10364 04
- Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
- Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03
- Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04
- Concept for a gas operated actuator
NPO-11340 B70-10516 07
- High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
- The water-cryogen heat exchanger
NUC-11029 B70-10591 03
- Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
- System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
- Resonance tube igniter
LEWIS-11219 B70-10618 04
- Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04
- High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
- Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
- Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07
- An unconfined, large-volume hydrogen/air explosion
NUC-11000 B71-10041 03
- Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02
- Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04
- Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
- Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
- Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
- Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07
- Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
- Compressed gas handbook
KSC-10662 B71-10272 03
- Electroplating on titanium alloy
M-FS-21251 B71-10338 08
- Mass separator for low velocity ions
ARC-10375 B72-10123 03
- Fluidic ignition detection
M-FS-21498 B72-10158 06
- Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
- Aircrew oxygen system
ARC-10247 B72-10195 05
- Comparison of catalyst activity
ARC-10493 B72-10201 04
- Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03
- Hydrogen eliminator
ARC-10408 B72-10208 03
- Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
- Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04
- Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01

- Propulsion sizing program
MSC-14016 B72-10605 09
A method of eliminating hydrogen maser wall shift
HQ-10663 B72-10670 03
Stable palladium alloys for diffusion of hydrogen
NPO-11747 B73-10024 04
Gas-operated actuator: A concept
NPO-11369 B73-10133 03
Hydrogen-environment embrittlement of metals: A study
M-FS-22540 B73-10168 04
Fluidic device for measuring constituent masses of a flowing binary gas mixture
LEWIS-11995 B73-10230 06
Detecting and measuring metabolic byproducts by electrochemical sensing
LANGLEY-11525 B73-10523 05
Evaluation of test procedures for hydrogen environment embrittlement
ARC-10919 B74-10222 04
High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 B74-10265 04
Ultraviolet hydrogen-discharge lamp
MSC-14793 B75-10272 03
Using permeable membranes to produce hydrogen and oxygen from water
MSC-12600 B75-10314 04
Acid/alkali bromide secondary battery
NPO-13237 B75-10324 01
- HYDROGEN ATOMS**
Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 B70-10581 03
- HYDROGEN BONDS**
Adhesion theory review
AEC-10083 B72-10231 04
- HYDROGEN COMPOUNDS**
Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 B72-10127 03
Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03
- HYDROGEN FUELS**
Gas generators produce hydrogen-rich fuel
NPO-13342 B75-10203 06
Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06
- HYDROGEN IONS**
Failure in glass
AEC-10088 B72-10364 04
Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
- HYDROGEN ISOTOPES**
A superior process for forming titanium hydrogen isotopic films
LEWIS-12083 B75-10001 03
- HYDROGEN OXYGEN ENGINES**
Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
- HYDROGEN OXYGEN FUEL CELLS**
Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
- Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
HQ-10565 B70-10035 01
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
Elimination of gases and contamination from water
KSC-10502 B70-10456 05
Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
Water electrolysis module
ARC-10246 B71-10203 03
- HYDROGENATION**
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
- HYDROGENOMONAS**
Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
- HYDROLOGY**
Assessment of water pollution by airborne measurement of chlorophyll
ARC-10648 B72-10566 04
Multispectral data analysis: LARSYS III
MSC-14823 B75-10235 03
- HYDROLYSIS**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 B70-10233 04
Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 B72-10249 04
- HYDROMETERS**
Microflora in soils of desert regions
NPO-11215 B70-10253 05
- HYDROPHONES**
Piezoelectric transducer
HQ-10548 B70-10157 01
- HYDROSTATIC PRESSURE**
Progress in research on chlorate candle technology
MSC-13409 B70-10258 04
Biaxial prestressing of brittle materials
M-FS-20272 B70-10316 04
Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08
Rapid evaluation of reverse-osmosis membranes
ARC-10659 B72-10413 04
- HYDROSTATICS**
High pressure flow-rate switch
NPO-10722 B70-10028 07
High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
- HYDROTHERMAL CRYSTAL GROWTH**
Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04
- HYDROXIDES**
Initiation of polymerization by tetrabutylammonium p-lithiophenoxide
ARC-10553 B72-10223 04
Silver stain for electron microscopy
ARC-10661 B72-10415 05
- HYDROXYL COMPOUNDS**
Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04
Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
Photochromism of dihydroquinolines
HQ-10574 B70-10574 04
Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
Halogenation of microcapsule walls
ARC-10410 B72-10161 04
Carbon dioxide concentrator
ARC-10245 B72-10194 05
Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
Failure in glass
AEC-10088 B72-10364 04
New type of trifunctional alcohol
NPO-10714 B72-10553 04
- HYGIENE**
Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
- HYGROSCOPICITY**
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
Rising-plate rheometer
ARC-10524 B72-10026 03
Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
- HYPERBOLAS**
Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
- HYPERBOLIC FUNCTIONS**
Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
Acoustic spectral analysis and testing techniques
NPO-11554 B72-10341 03
- HYPERGOLIC ROCKET PROPELLANTS**
Main tank injection pressurization program
LEWIS-11368 B72-10069 09
- HYPEROXIA**
Acceleration of the aging process by oxygen
ARC-10928 B75-10030 05
- HYPERSONIC AIRCRAFT**
Electro-chemical grinding
LANGLEY-10801 B72-10744 08
- HYPERSONIC BOUNDARY LAYER**
Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
- HYPERSONIC SPEED**
Continuous-flow variable-density wind tunnel facilities
NPO-11287 B72-10078 06
- HYPERVELOCITY PROJECTILES**
Collapsible pistons for light-gas guns
JSC-13789 B73-10413 07

HYPERVELOCITY WIND TUNNELS

Experimental investigation and analysis of two sources of nozzle-thrust misalignment
 NPO-11355 B70-10406 06
 Continuous-flow variable-density wind tunnel facilities
 NPO-11287 B72-10078 06

HYPOTHESES

Generalized safety equation - A concept
 M-FS-20522 B71-10183 06

HYSTERESIS

Slow-speed drives for miniature devices
 NPO-10700 B70-10007 02
 Inorganic bonding of semiconductor strain gages
 GSFC-10833 B70-10215 08
 Flexible pivot mount eliminates friction and hysteresis
 M-FS-20725 B70-10577 07
 Design of hysteresis circuits using differential amplifiers
 ARC-10070 B71-10162 01
 A study of nitride devices for computer memory applications
 M-FS-20971 B71-10350 03
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Pulse width-pulse rate modulator
 ARC-10025 B71-10497 01
 Vortex servovalve for fluidic or electrical input
 ARC-10155 B72-10173 07
 Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
 MSC-14555 B74-10156 06

IBM COMPUTERS

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
 LEWIS-10788 B71-10392 09

IBM COMPUTERS

Lift distribution in a rectangular jet
 ARC-10424 B71-10030 09
 FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
 NUC-10242 B71-10038 09
 TCB operation supply inventory system /TCBSYS/
 GSFC-11306 B71-10314 09
 Snap dynamics
 M-FS-21531 B72-10265 09
 Chemical kinetics computer program for static and flow reactions
 LEWIS-11467 B72-10580 04
 Computer program for fitting low-order polynomial splines by method of least squares
 LEWIS-11651 B72-10585 09
 Computer program for afterheat temperature distribution for mobile nuclear power plant
 LEWIS-11693 B72-10634 09

IBM 360 COMPUTER

Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
 M-FS-14292 B70-10597 09
 Multibody Interplanetary Swingby Trajectories /MIST-1/
 M-FS-15081 B70-10603 09

Post Flight Dynamic Analysis Simulation
 M-FS-15067 B70-10605 09
 Reliability Analysis Model
 M-FS-14513 B70-10614 09
 Tracking antenna deformation program
 GSFC-11191 B71-10017 09
 Fiscal output data produce versatile graphic-numeric charts
 NUC-10394 B71-10108 09
 CSM programs SM RCS propellant quantity gaging systems program
 MSC-17308 B71-10130 09
 Quick response targeting program
 M-FS-15157 B71-10147 09
 Method for constructing periodic orbits in nonlinear dynamic systems
 M-FS-14654 B71-10151 09
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Analysis of low resolution mass spectra
 GSFC-11279 B71-10267 09
 NASTRAN computer system level 12.1
 GSFC-10991 B71-10285 09
 New procedure for determining minimum time orbit transfers
 M-FS-14804 B71-10376 09
 Thermal analysis system /TAS-1/ program
 NPO-11849 B71-10386 09
 Tolerance analysis program
 MSC-17487 B71-10389 09
 Frame modal analysis
 MSC-17562 B71-10414 09
 FORTRAN 4 digital program changer
 MSC-17567 B71-10448 09
 Radiation diffraction calculation program /DIFF2/
 GSFC-11422 B71-10462 09
 Cloud-free resolution element statistics program
 GSFC-11494 B71-10463 09
 Computer design of extension springs
 M-FS-24073 B71-10473 09
 Monte Carlo program for the transport of neutrons and gamma rays
 LEWIS-11403 B71-10490 09
 Synthesis of dynamic systems
 M-FS-21490 B71-10491 09
 A low-altitude satellite interaction study
 GSFC-11384 B71-10499 09
 Automated preventive maintenance program
 GSFC-11408 B71-10500 09
 Variable dimension automatic synthesis programs (VASP)
 ARC-10616 B72-10065 09
 Program for determination of radiation interchange factors
 MSC-17563 B72-10071 09
 Wind trajectory tracing for air pollution studies (AIRPOL)
 NPO-11892 B72-10072 09
 Computer program draws three-dimensional surfaces
 LEWIS-10482 B72-10253 09
 Rapid analysis of electric propulsion missions
 ARC-10430 B72-10299 09
 Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
 M-FS-21652 B72-10486 09
 System/360 Computer Assisted Network Scheduling (CANS) System
 GSFC-10909 B72-10599 09

Significance arithmetic experimental package (SIGPAC)
 GSFC-11499 B72-10600 09
 Interplanetary Trajectories, Encke Method (ITEM)
 GSFC-11576 B72-10604 09
 Program to produce horizontal stereographic print maps from Nimbus HRIR data
 GSFC-11397 B72-10606 09
 Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
 GPEDIT
 GSFC-11308 B72-10620 09
 FORTRAN manpower account program
 NPO-11973 B72-10623 09
 Computer program to generate attitude error equations for a gimbal platform
 M-FS-21991 B72-10624 09
 Program to reduce the size of structural matrices
 MSC-17619 B72-10625 09
 Geometric field-line calculations
 GSFC-11597 B72-10674 09
 Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
 GSFC-11523 B72-10675 09
 Propellant feed systems transients
 MSC-17848 B72-10677 06
 Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
 MSC-17930 B72-10722 06
 Three bit mass spectral search program
 NPO-11960 B72-10747 09
 Final report on a study of low-density nozzle flows, with application to microthrust rockets
 HQ-10761 B72-10748 06
 A comprehensive program for textual concordances and statistics
 JSC-17484 B73-10049 09
 Ascent control analysis for S-II derivative launch vehicles, digital computer program
 M-FS-24324 B73-10120 09
 GREMEX update (Goddard research engineering management exercise)
 GSFC-11512 B73-10162 09
 Method for predicting rotor free-wake positions and the resulting rotor blade airloads
 LANGLEY-10674 B73-10239 06
 Computer program to determine roots of polynomials by ratio of successive derivatives
 LEWIS-11809 B73-10244 09
 Characteristics of FORTRAN
 LANGLEY-11177 B73-10322 09
 Logistics hardware and services control system
 KSC-10819 B73-10418 09
 Dynamic nonlinear analysis of shells of revolution (DYNASOR II)
 JSC-14496 B73-10443 09
 Frequencies and modes for shells of revolution (FAMSOR)
 JSC-14497 B73-10444 09
 The static nonlinear analysis of shells of revolution (SNASOR II)
 JSC-14495 B73-10445 09
 Stiffness and mass matrices for shells of revolution (SAMMSOR II)
 JSC-14494 B73-10446 09

- Graphics shadowing analysis
M-FS-21406 B74-10040 09
Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09
Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09
Separation dynamics of S-II derivative launch vehicle
M-FS-24325 B74-10151 06
Calculation of aerodynamic characteristics of STOL aircraft
ARC-10882 B74-10221 09
Regenerative cooling design and analysis computer program
LEWIS-12110 B75-10015 09
Computer programs for handling propulsion system noise data
LEWIS-12285 B75-10019 09
Computer program for definition of transonic axial-flow compressor blade rows
LEWIS-12325 B75-10021 09
View factor computer program (VIEW)
GSFC-11910 B75-10032 09
Extensive set of macros for structured programming in OS/360 assembly language (STRCMACS)
GSFC-11938 B75-10033 09
Prediction of aircraft noise source and estimation of noise-level contours
ARC-10880 B75-10060 09
Remote file inquiry (RFI) system
KSC-10837 B75-10155 09
Multiple-compartment venting program
MSC-19428 B75-10234 06
Multispectral data analysis: LARSYS III
MSC-14823 B75-10235 03
Computer program for the attenuation of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09
Optical design computer program: LENS II
GSFC-11951 B75-10250 03
Computer system for library access
GSFC-11952 B75-10292 09
Small interactive image processing system (SMIPS)
GSFC-12079 B75-10295 09
- IBM 1130 COMPUTER**
Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
- IBM 1620 COMPUTER**
Calculation of the inertia tensor and center of gravity of complex bodies
NPO-10827 B70-10158 09
Design and evaluation of brushless electrical generators
LEWIS-10124 B70-10554 02
Computerized toroidal transformer design
NPO-11115 B70-10606 09
Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay
ARG-10281 B70-10608 03
- IBM 2250 COMPUTER**
Graphics shadowing analysis
M-FS-21406 B74-10040 09
- IBM 7040 COMPUTER**
Information retrieval system
HQ-10426 B70-10556 09
MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
- IBM 7044 COMPUTER**
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
Information retrieval system
HQ-10426 B70-10556 09
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
Synthesis of dynamic systems
M-FS-21490 B71-10491 09
Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
LEWIS-11636 B72-10070 09
Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09
Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09
Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09
Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
Compressible flow computer program for gas film seals
LEWIS-12286 B75-10020 09
- IBM 7090 COMPUTER**
A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
Aerotherm charring materials ablation computer program
LEWIS-11854 B73-10065 09
Computer program for preliminary design analysis of axial-flow turbines
LEWIS-11815 B73-10066 09
Computer program for thermodynamic analysis of open-cycle multishaft power system
LEWIS-12324 B75-10002 09
Computer program for definition of transonic axial-flow compressor blade rows
LEWIS-12325 B75-10021 09
- IBM 7094 COMPUTER**
Automatic data generation scheme for finite-element method /FEDGE/
Computer program
NPO-11069 B70-10067 09
- Polynomial-smoothing and derivative-estimating formulas for functions of one or two independent variables
NPO-11256 B70-10078 09
A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
Neutron ages computed from experimental activation data
LEWIS-10949 B70-10557 09
Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09
Separation of two bodies in space
NPO-10663 B70-10625 09
A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Digital simulation program improved
M-FS-01504 B70-10705 09
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
Non-symmetrical two dimensional scattering program
NPO-11576 B71-10007 09
Symmetrical two dimensional scattering program
NPO-11578 B71-10008 09
Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
Manpower forecast program
NPO-11551 B71-10244 09
Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09
Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09
Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
Study-simulation of space station dynamics
M-FS-21227 B71-10382 09

Thermal analysis system /TAS-1/
program
NPO-11849 B71-10386 09
Steady temperature and density
distributions in a gas containing heat
sources
LEWIS-10905 B71-10398 09
Analysis and design of a flat central
finned-tube radiator
LEWIS-10893 B71-10399 09
Computer program optimizes design of
nuclear radiation shields
LEWIS-10998 B71-10400 09
Computer program calculates transonic
velocities in turbomachines
LEWIS-10977 B71-10402 09
Minimum weight meteoroid shielding
determination
MSC-17017 B71-10447 09
Landing dynamics program for impact
attenuating vehicles /LANDIT/
NPO-10840 B71-10472 09
Monte Carlo program for the transport
of neutrons and gamma rays
LEWIS-11403 B71-10490 09
Synthesis of dynamic systems
M-FS-21490 B71-10491 09
Design and evaluation of convectively
cooled nozzles
LEWIS-10894 B71-10508 09
Evaluation of rotating, incompressibly
lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09
Variable dimension automatic synthesis
programs (VASP)
ARC-10616 B72-10065 09
Design of two-dimensional
sharp-edged-throat supersonic nozzle with
boundary-layer correction
LEWIS-11636 B72-10070 09
Program for calculating laminar and
turbulent boundary layers in arbitrary
pressure gradients
LEWIS-11097 B72-10111 09
Computer program draws
three-dimensional surfaces
LEWIS-10482 B72-10253 09
Computer program for calculating the
temperature field of face seals
LEWIS-11110 B72-10483 09
Computer programs for the design of
liquid-to-liquid jet pumps
LEWIS-11679 B72-10584 09
Computer program for
quasi-three-dimensional calculation of
surface velocities and choking flow for
turbomachine blade rows
LEWIS-11635 B72-10586 09
Aerotherm charring materials ablation
computer program
LEWIS-11854 B73-10065 09
Computer program for preliminary design
analysis of axial-flow turbines
LEWIS-11815 B73-10066 09
Automated Shell Theory for Rotating
Structures (ASTROS)
M-FS-21970 B73-10115 09
GREMEX update (Goddard research
engineering management exercise)
GSFC-11512 B73-10162 09
Computer program for the design of
toroidal transformers
LEWIS-11878 B73-10214 09
Computer program for calculation of
thermodynamic and transport properties of
complex chemical systems
LEWIS-11997 B73-10231 09

A computer program for calculating
design and off-design performance for
turbojet and turbofan engines
LEWIS-12010 B73-10232 09
Computer program to determine roots
of polynomials by ratio of successive
derivatives
LEWIS-11809 B73-10244 09
A computer program for calculating
design and off-design performance of two-
and three-spool turbofans with as many
as three nozzles
LEWIS-12011 B73-10245 09
Computer program for compressible flow
network analysis
LEWIS-11859 B73-10246 09
Computer program to compute buckling
loads of simply supported anisotropic
plates
LEWIS-11961 B73-10247 09
Computer program calculates
quasi-one-dimensional flow across face
seals and narrow slots
LEWIS-11996 B73-10248 09
Program for calculating total-efficiency
of specific-speed characteristics of
centrifugal compressors
LEWIS-12008 B73-10309 09
Computer program for spacecraft-booster
separation spring selection, set
composition, and location determination
GSFC-11616 B74-10037 09
Computer program for predicting
off-design performance of centrifugal
compressors
LEWIS-12186 B74-10067 09
Computation of aerodynamic interference
between lifting surfaces and lift- and
cruise-fans
ARC-10833 B74-10113 09
Computer program for calculating water
and steam properties
LEWIS-12206 B74-10123 09
Computer program for calculating critical
speeds of rotating shafts
LEWIS-11910 B74-10128 09
Computer program for calculating
laminar, transitional, and turbulent
boundary layers for a compressible
axisymmetric flow
LEWIS-12178 B74-10129 09
Computer program for thermodynamic
analysis of open-cycle multishaft power
system
LEWIS-12324 B75-10002 09
Computer program to generate engine
inlet flow contour maps and distortion
parameters
LEWIS-12247 B75-10005 09
Computer programs for calculating
potential flow in propulsion system inlets
LEWIS-12152 B75-10018 09
Computer programs for handling
propulsion system noise data
LEWIS-12285 B75-10019 09
Compressible flow computer program for
gas film seals
LEWIS-12286 B75-10020 09
Computer program for definition of
transonic axial-flow compressor blade
rows
LEWIS-12325 B75-10021 09
RETSCP-A computer program for
analysis of rocket engine thermal strains
with cyclic plasticity
LEWIS-12388 B75-10186 09

Computer program for calculating water
and steam properties
LEWIS-12519 B75-10187 09
Computer program for calculating
thermodynamic and transport properties of
fluids
LEWIS-12520 B75-10188 09
Automated statistical analysis program
(ASAP)
LANGLEY-11125 B75-10217 02
Computer program for the attenuation
of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09

ICE
Removal of ice and marine growth from
ship surfaces: A concept
NPO-13658 B75-10282 06

ICE FORMATION
Fluid insulation to prevent ice formation
in heat exchangers
LEWIS-11959 B73-10028 06

IDEAL GAS
Determination of gas volume trapped in
a closed fluid system
MSC-15685 B71-10094 06
Steady temperature and density
distributions in a gas containing heat
sources
LEWIS-10905 B71-10398 09

IDENTIFYING
Metal detector system
ARC-10265 B70-10511 01
Nondestructive spot tests allow rapid
identification of metals
LANGLEY-10539 B70-10520 04
Spectral emission measurement of
igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
Rapid method for sampling metals for
materials identification
MSC-17332 B71-10320 04
Pictorial display of materials and
processes aids in fabricating complex
assemblies
M-FS-24006 B71-10341 01
Nondispersive infrared analyzer for
specific gases in complex mixtures
ARC-10308 B72-10198 03
A magnetic mouse activity meter
HQ-10664 B72-10482 05
Ultrasonic scanner for footprint
identification
NPO-13055 B74-10212 03
Automated drug identification system
NPO-13063 B74-10213 05
Fluorescent color coding of power
receptacles
MSC-19504 B75-10109 01
Microbial load monitor
MSC-14062 B75-10167 05

IDLERS
Anti-slipping system improves wire saw
performance
MSC-13508 B71-10522 07

IGNITERS
Progress in research on chlorate candle
technology
MSC-13409 B70-10258 04
Airflow distribution control for improved
turbine engine performance
LEWIS-11593 B72-10178 07
Remote control flare stack igniter for
combustible gases
M-FS-21675 B72-10352 07
Design criteria monograph on solid rocket
motor igniters
LEWIS-11826 B72-10715 06

IGNITION

- Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 870-10285 04
- Resonance tube igniter
LEWIS-11219 870-10618 04
- An unconfined, large-volume hydrogen/air explosion
NUC-11000 871-10041 03
- Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 872-10127 03
- Fluidic ignition detection
M-FS-21498 872-10158 06
- Chemical kinetics computer program for static and flow reactions
LEWIS-11467 872-10580 04

IGNITION SYSTEMS

- Design criteria monograph on solid rocket motor igniters
LEWIS-11826 872-10715 06
- Ignition of sounding rocket motors with hand-pumped air
LANGLEY-11152 874-10202 03

IGNITION TEMPERATURE

- Exothermic brazing units
M-FS-21435 871-10467 08
- Controlled flow assembly
M-FS-21716 872-10404 07
- Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure
M-FS-21930 872-10476 06
- Autoignition test cell with flexible atmosphere control
KSC-10198 873-10113 04

ILLUMINATING

- Laser method for finding axis of rotation
ARC-10388 870-10439 03

ILLUMINATION

- Illumination control system
ARC-10527 872-10167 02
- Annular objective apertures improve resolution of electron microscopes
ARC-10448 872-10171 03
- Cine recording ophthalmoscope
ARC-10399 872-10189 05
- Hand-held photomicroscopy system
ARC-10468 872-10190 03
- Projections of scan patterns on human retina
ARC-10181 872-10193 05

ILLUMINATORS

- Multilayer screen gives cathode ray tube high contrast
ERC-10217 870-10454 01
- Hybrid holographic system
M-FS-20074 872-10260 03

IMAGE CONTRAST

- Annular objective apertures improve resolution of electron microscopes
ARC-10448 872-10171 03

IMAGE CONVERTERS

- A magnetically focused image tube employing an opaque photocathode
GSFC-11602 873-10255 02
- Laser scanned image sensors using photoconductors with deep traps
NPO-13131 875-10112 03

IMAGE DISSECTOR TUBES

- Improved optical lens system
NPO-11311 870-10354 03
- Planet geometric center tracker
ARC-10084 871-10445 02
- Interferometric rotation sensor
ARC-10278 872-10274 03

- Light-direction sensor based on birefringency
NPO-11201 873-10131 03

IMAGE ENHANCEMENT

- A sensitive image intensifier which uses inert gas
LRL-10024 872-10312 03
- Video enhancement of X-ray and neutron radiographs
LEWIS-11944 873-10009 03
- Digital TV image enhancement system
GSFC-11256 873-10285 02
- Vertical copy camera system provides photographs from ERTS-1 imagery
LEWIS-12140 874-10009 07
- Simple computer method provides contours for radiological images
ARC-10940 875-10146 09

IMAGE FILTERS

- Visual sensitivity tester
ARC-10329 872-10203 05
- A dual-beam actinic light source for photosynthesis research
ARC-10351 872-10205 05
- Wide-field birefringent elements
MSC-12677 875-10105 03

IMAGE INTENSIFIERS

- Neutron-image intensifier
ARG-10249 870-10240 03
- Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 871-10378 03
- Advanced infrared photomultiplier
M-FS-20941 872-10152 03
- A sensitive image intensifier which uses inert gas
LRL-10024 872-10312 03
- Neutron radiographic viewing system
M-FS-22024 872-10468 02

IMAGE MOTION COMPENSATION

- Motion compensator for holographic motion picture camera
M-FS-22517 873-10434 03

IMAGE ORTHICONS

- Nematic liquid crystals for optical shutters: A concept
NPO-11367 872-10083 03

IMAGE TUBES

- Multipass holographic interferometer improves image resolution
HQ-10499 870-10426 03
- Solid state television camera has no imaging tube
M-FS-21553 872-10254 02
- A magnetically focused image tube employing an opaque photocathode
GSFC-11602 873-10255 02

IMAGERY

- Image formation in microwave holography
ARC-10773 873-10378 03
- Vertical copy camera system provides photographs from ERTS-1 imagery
LEWIS-12140 874-10009 07

IMAGES

- Luminescent screen composition and apparatus
ERC-10010 870-10440 01
- Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 870-10568 05
- Radiant energy absorption enhancement in optical imaging systems
ARC-10194 871-10112 03

- Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 871-10120 03
- Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 871-10236 03
- Solid-state data interpretation system - A concept
M-FS-20587 871-10366 02
- Virtual-image display system for flight simulators
ARC-10175 871-10427 03
- Planet geometric center tracker
ARC-10084 871-10445 02
- Modified camera records lens settings on film
MSC-12363 871-10494 03
- Piezoelectric transducer mosaic
ARC-10509 872-10014 01
- Optical alignment of electrodes on electrical discharge machines
XAC-09489 872-10036 07
- Hand-held photomicroscopy system
ARC-10468 872-10190 03
- Recorder/processor apparatus
GSFC-11553 874-10042 03

IMAGING TECHNIQUES

- Reference for radiographic film interpreters
M-FS-16695 870-10189 03
- Kaleidoscopic light feedback for television systems
MSC-12386 871-10068 03
- Radiant energy absorption enhancement in optical imaging systems
ARC-10194 871-10112 03
- A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 871-10439 02
- A liquid radiation detector with high spatial resolution
MSC-13965 872-10034 03
- Annular objective apertures improve resolution of electron microscopes
ARC-10448 872-10171 03
- Design and fabrication of an experimental image forming light modulator
M-FS-22547 873-10182 03
- Microwave holography for nondestructive testing
ARC-10774 873-10379 03
- Graphics shadowing analysis
M-FS-21406 874-10040 09
- Coaxial, self-aligning optical scanning system
LANGLEY-11711 875-10034 03
- Data processing large quantities of multispectral information
MSC-14472 875-10080 03

IMMUNOLOGY

- Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 872-10006 05

IMPACT

- Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 870-10285 04
- High-impact dynamic-response analysis of nonlinear structures
NPO-11716 871-10134 09
- Erosion of metals by multiple impacts with water
HQ-10591 871-10197 04
- Dynamics of short pressure probes
LEWIS-11293 871-10374 09

IMPACT ACCELERATION

Telemetry for impact acceleration measurements
 ARC-10289 B70-10079 01
 Landing dynamics program for impact attenuating vehicles /LANDIT/
 NPO-10840 B71-10472 09

IMPACT DAMAGE

The impact of water on free-falling bodies
 M-FS-23310 B75-10311 03

IMPACT LOADS

Lightweight, high-strength, reinforced plastic tube-framing die
 LANGLEY-10126 B70-10273 04
 Peak structural response to nonstationary random excitations
 NPO-11617 B71-10188 06
 Water impact loads
 M-FS-21955 B72-10621 09
 The impact of water on free-falling bodies
 M-FS-23310 B75-10311 03

IMPACT PREDICTION

Landing dynamics program for impact attenuating vehicles /LANDIT/
 NPO-10840 B71-10472 09

IMPACT RESISTANCE

Surface treatment for valve seats
 NPO-10779 B70-10202 08
 Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure
 M-FS-21930 B72-10476 06
 Equations to assess the impact resistance of fiber composites
 LEWIS-11486 B72-10503 04
 Energy absorbing system for mechanical impacts
 NPO-10671 B72-10712 06
 Residual stress effects on the impact resistance and strength of fiber composites
 LEWIS-11984 B73-10063 04
 Computer program for transient response of structural rings subjected to fragment impact
 LEWIS-11926 B73-10064 09

IMPACT TESTS

Detonation hazards with "safe" industrial solvents
 LANGLEY-10299 B70-10404 04
 Use of thin plastic films at cryogenic temperatures
 LEWIS-11047 B72-10038 04
 Velocity accelerator for particles
 NPO-11349 B72-10082 03
 Determination of impact sensitivity of materials at high pressures
 MSC-13700 B72-10216 07
 Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure
 M-FS-21930 B72-10476 06
 Equations to assess the impact resistance of fiber composites
 LEWIS-11486 B72-10503 04

IMPACTORS

Planetary rock corer and drill concepts
 NPO-11416 B72-10398 07

IMPEDANCE

Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
 M-FS-20561 B70-10012 06
 Active resistance capacitance filter design
 ARC-10020 B70-10034 01

Constant-voltage drive current-steering switch
 NPO-10743 B70-10046 01
 Multi-frequency resonant antenna
 HQ-10215 B70-10098 02
 Analysis and optimization of an omnidirectional direction-finding system
 M-FS-14346 B70-10112 02
 Vapor feeding of liquid metal cathodes
 HQ-10213 B70-10168 03
 Electronic position indicator for latching solenoid valves
 LEWIS-10926 B70-10174 01
 A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01
 Simplified method for measuring the impedance of RF power sources - A concept
 NPO-10734 B70-10212 02
 Design procedure for improved active filters
 M-FS-20445 B70-10238 02
 Switching circuits with fast response and low power drain
 GSFC-10878 B70-10250 01
 Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
 Efficient/reliable dc-to-dc inverter circuit
 XGS-06226 B70-10425 01
 Saturable-reactor motor starter reduces line voltage fluctuations
 M-FS-18921 B71-10013 01
 Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03
 Isolated-line commutator-amplifier
 M-FS-20734 B71-10148 02
 Design of hysteresis circuits using differential amplifiers
 ARC-10070 B71-10162 01
 A topological approach to computer-aided sensitivity analysis
 ARC-10214 B71-10164 02
 Small size transformer provides high power regulation with low ripple and maximum control
 M-FS-16709 B71-10193 01
 Digital computer program for analyzing chugging instabilities
 LEWIS-11294 B71-10215 09
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Discrete-component S-band power amplifier
 GSFC-11248 B71-10365 01
 Flat conductor cable handbook
 M-FS-21009 B71-10379 01
 RF-controlled implantable solid state switch
 ARC-10136 B71-10426 01
 Miniature battery-operated electromagnetic system for blood flow measurements
 ARC-10362 B71-10477 05
 Stable photosensor amplifiers
 NPO-11561 B72-10100 01
 Low noise electromagnetic flowmeter
 M-FS-21291 B72-10108 02
 Differential input preamplifier
 ARC-10489 B72-10165 01
 Diode-quad bridge for reactive transducers and FM discriminators
 ARC-10364 B72-10691 01

IMPEDANCE MATCHING

Thermally cascaded thermoelectric generator
 NPO-10753 B70-10280 03
 Fabrication of electroacoustic RF amplifiers
 ERC-10266 B70-10460 01
 A new solid-state logarithmic radiometer
 ARC-10287 B70-10633 02
 Constant current load matches impedances of electronic components
 GSFC-10982 B70-10643 01
 Oscillator with wide dynamic tuning range
 GSFC-11086 B71-10286 01
 A proposed adjustable RF cable connector
 M-FS-24271 B73-10097 01
 A vacuum chamber feedthrough
 M-FS-21133 B73-10152 01
 High q band-pass resonators utilizing composite band-stop resonator pairs
 GSFC-10990 B74-10035 02

IMPEDANCE PROBES

In vivo measurement of mechanical impedance of bone
 ARC-10857 B74-10245 05

IMPELLERS

Method of calculating blade-to-blade plane flow in centrifugal pump
 M-FS-18087 B70-10124 06
 Universal router concept
 M-FS-20756 B70-10313 07
 Slot configuration for axial-flow turbomachinery blades
 LEWIS-11572 B72-10484 07

IMPINGEMENT

Radiant energy absorption enhancement in optical imaging systems
 ARC-10194 B71-10112 03
 Microorganism sample device
 LANGLEY-10258 B71-10487 05
 Study of high altitude plume impingement
 M-FS-21414 B72-10601 09

IMPLANTATION

Miniature implantable instrument measures and transmits heart function data
 ARC-10201 B71-10163 05
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01
 RF-controlled implantable solid state switch
 ARC-10136 B71-10426 01
 Implanted telemeter for electrocardiogram and body temperature
 XAC-08505 B72-10035 05
 Implantable drug therapy device: A concept
 NPO-11934 B72-10708 05
 GaAs transistors formed by Be or Mg ion implantation
 LANGLEY-11204 B73-10442 01
 Artificial limb connection
 KSC-10833 B74-10183 05
 Heart-rate pulse-shift detector
 ARC-10729 B74-10196 01
 Dip molding to form intricately-shaped medical elastomer devices
 NPO-13535 B75-10238 08

IMPREGNATING

Low-temperature radiation-resistant material for ball-bearing retainers
NUC-10058 B70-10576 04

New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04

Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04

Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01

IMPROVEMENT

No-err typing aids
M-FS-15218 B72-10498 07

Improved capacitance multiplier circuit
NPO-11948 B74-10162 02

IMPULSES

Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01

Audio signal processor
MSC-12223 B70-10180 01

Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08

Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06

Tracking antenna deformation program
GSFC-11191 B71-10017 09

Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02

EKG isolator.
M-FS-21236 B71-10124 05

Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05

Vibration testing and analysis using holography
M-FS-21050 B71-10352 03

New procedure for determining minimum time orbit transfers
M-FS-14804 B71-10376 09

Dynamic testing of complex structures
JSC-12569 B73-10057 06

IMPURITIES

Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 B70-10177 04

Dopant for sodium niobate capacitor dielectric
MSC-11773 B70-10190 01

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03

High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01

Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04

Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01

Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04

Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04

IN-FLIGHT MONITORING

Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09

INCANDESCENCE

A conceptual current surge protector for incandescent lamps
M-FS-16658 B70-10483 01

An unconfined, large-volume hydrogen/air explosion
NUC-11000 B71-10041 03

INCENTIVES

Motivation techniques for supervision
JSC-19187 B73-10448 05

INCIDENCE

Ultraviolet interferometer
HQ-10546 B71-10026 03

INCIDENT RADIATION

Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03

Less-expensive Rochon prisms
M-FS-20554 B70-10681 03

Non-symmetrical two dimensional scattering program
NPO-11576 B71-10007 09

Symmetrical two dimensional scattering program
NPO-11578 B71-10008 09

Radiant energy absorption enhancement in optical imaging systems
ARC-10194 B71-10112 03

Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03

Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03

INCINERATORS

New materials for fireplace logs
M-FS-21363 B71-10339 04

INCLUSIONS

Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08

Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07

INCOMPRESSIBILITY

Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09

INCOMPRESSIBLE FLOW

Small hydraulic turbine drives
LEWIS-11064 B70-10416 07

Computer program for the prediction of reorientation flow dynamics
LEWIS-11816 B73-10307 09

INCOMPRESSIBLE FLUIDS

Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06

Compressed gas handbook
KSC-10662 B71-10272 03

Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09

Parallel-plate viscometer
NPO-11387 B72-10700 03

INCONEL (TRADEMARK)

Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel

M-FS-18712 B70-10092 04
High temperature rare earth solid lubricants

LEWIS-10983 B70-10175 04
Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications

M-FS-18427 B70-10199 04
Mechanism and kinetics of aging in Inconel 718

M-FS-18775 B70-10261 04
High precision cryogenic thermal conductivity standards

NUC-10555 B70-10310 04
Heat-barrier coatings for combustion chambers

M-FS-18618 B70-10363 07
Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen

M-FS-18753 B70-10364 04
Effects of hydrogen on ELI titanium alloy Ti-6Al-2.5Sn

M-FS-18815 B70-10366 04
Friction characteristics of graphite and graphite-metal combinations at various temperatures

NUC-10151 B70-10467 04
Molding procedure for casting a variety of alloys

ARC-10358 B70-10512 08
Analytical prediction of reverse buckling pressure for thin shells

KSC-10515 B70-10582 06
Improved burst disk/cutter assembly KSC-10516 B70-10583 07

Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04

Compact electric heater
LEWIS-11172 B70-10677 03

Method of joining metals of significantly different expansion rates
NPO-12076 B71-10028 08

Strain gage performance above 1033 K
M-FS-18831 B71-10225 04

Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04

Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07

Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04

INDENTATION

Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04

INDEPENDENT VARIABLES

Simplified computation of compressible fluid flow parameters
KSC-10400 B70-10225 06

Quick calculation method for fluid flow through duct systems
M-FS-15069 B70-10487 02

Thermal conductivity of gaseous and liquid hydrogen
NUC-10558 B71-10105 04

Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03

Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09

Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01

Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02

Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09

Statistical characterization of phenolic-novolac structures
ARC-10393 B71-10255 04

Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03

Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09

Microbial burden prediction model program
NPO-11709 B71-10401 09

Manpower management information system /MIS/
M-FS-21477 B71-10431 09

Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01

Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 B71-10517 02

Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01

Optimization technique for problems with an inequality constraint
ARC-10522 B72-10222 09

Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09

Optimizing designs of two-level factorial experiments given partial prior information (NAMER)
LEWIS-11708 B72-10726 09

INDEXES
Indexing film with a fluidic sensor
MSC-14117 B72-10501 02

INDEXES (DOCUMENTATION)
Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09

Program for creating an operating system generation cross reference index (SGINDEX)
GSFC-11612 B72-10650 09

A comprehensive program for textual concordances and statistics
JSC-17484 B73-10049 09

INDEXES (RATIOS)
New model performance index for engineering design of control systems
HQ-10520 B70-10293 06

Rising-plate rheometer
ARC-10524 B72-10026 03

Accurate measurement of telemetry performance
NPO-11457 B72-10089 02

Sunspot analysis and prediction
M-FS-21724 B72-10317 03

INDICATING INSTRUMENTS

Very high frequency digital rangine system
MSC-15763 B70-10284 02

Visual device to assist computer program debugging
MSC-15833 B70-10308 09

Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01

Improved manual radio frequency direction finder
M-FS-20507 B70-10422 02

Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 B70-10534 01

Ground computer test trap
KSC-10574 B70-10561 09

Laser beam hydrocarbon detector
ARC-10156 B70-10631 03

Miniature grinder for solid specimens
M-FS-20005 B71-10059 05

Electronic ripple indicator
KSC-10162 B71-10170 01

Portable circuit-interruption indicator
KSC-10546 B71-10246 02

Improved relay chatter detector
NPO-10355 B71-10292 01

Calibration-interval adjustment indicator - A concept
M-FS-18693 B71-10309 01

New reaction tester accurate within 56 microseconds
MSC-13604 B72-10031 05

A reliable liquid helium detector
LEWIS-11487 B72-10145 01

Overlay board for control consoles
ARC-10007 B72-10191 02

Lightning flash detection system
ARC-10562 B72-10272 02

Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05

Reliable low-cost battery voltage indicator for light aircraft and automobiles
LEWIS-12020 B73-10249 01

Rechargeable, silver-zinc battery conditioner/monitor unit and state-of-charge indicator
M-FS-22835 B73-10486 02

INDIUM

High-field superconducting nested coil magnet
ARG-10060 B70-10061 03

High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08

Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08

INDIUM ARSENIDES

Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 B70-10475 04

INDIUM PHOSPHIDES

Visible light electroluminescent diodes of indium-gallium phosphide
ERC-10303 B70-10474 01

INDUCTANCE

Active resistance capacitance filter design
ARC-10020 B70-10034 01

High-field superconducting nested coil magnet
ARG-10060 B70-10061 03

INDUSTRIAL MANAGEMENT

Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02

A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01

Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01

Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02

Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03

Concept for a gas operated actuator
NPO-11340 B70-10516 07

Extended-life magnetic recording heads
GSFC-10097 B70-10521 01

Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01

Intensive care alarm system
GSFC-11377 B73-10126 02

INDUCTION
Induction brazing manual
M-FS-14924 B71-10123 08

INDUCTION HEATING
Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04

Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03

Simple, reproducible methods for thermal shock testing of brittle materials
NUC-11020 B72-10228 06

An improved gas extraction furnace
MSC-14138 B72-10544 04

Induction heating simplifies metal evaporation for ion plating
LEWIS-12595 B75-10288 03

INDUCTION MOTORS
Variable-frequency inverter controls torque, speed, and braking in ac induction motors
M-FS-22088 B73-10525 02

INDUCTORS
Active resistance capacitance filter design
ARC-10020 B70-10034 01

Nondissipative optimum charge regulator
XGS-10439 B70-10186 01

Efficient/reliable dc-to-dc inverter circuit
XGS-06226 B70-10425 01

Controlled current inductors
ERC-10139 B70-10494 01

High-strength magnetic materials
LEWIS-10697 B70-10596 03

Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05

Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03

Driver circuit for inductive loads
ARC-10073 B72-10268 01

INDUSTRIAL MANAGEMENT
Manufacturing contamination prevention handbook
M-FS-19113 B72-10394 08

INDUSTRIAL PLANTS

New procedure for design of self-adaptive control systems

LANGLEY-10255 B70-10115 02

A proposed remote manipulator system:

A concept

MSC-14245 B72-10733 06

INDUSTRIAL SAFETY

Detonation hazards with "safe" industrial solvents

LANGLEY-10299 B70-10404 04

Recommended safety guides for industrial laboratories and shops

SAN-10050 B71-10175 07

Pressurized lighting system

KSC-10644 B73-10280 02

Liquid and gaseous oxygen safety review

LEWIS-12041 B73-10310 04

Directory of aerospace safety specialized information sources

LEWIS-12223 B74-10019 03

Solid state remote power controllers for 120 VDC power systems

LEWIS-12523 B75-10150 02

Risk management technique for liquefied natural gas facilities

KSC-11005 B75-10193 04

Handbook for estimating toxic fuel hazards

M-FS-21114 B75-10198 04

Safety management of a complex R&D ground operating system

LEWIS-12559 B75-10241 07

INDUSTRIES

Universal router concept

M-FS-20756 B70-10313 07

Estimating carbon monoxide exposure

MSC-17211 B71-10319 04

Rapid method for sampling metals for materials identification

MSC-17332 B71-10320 04

Survey of information concerning large diameter deep hole drilling

AEC-10051 B72-10238 08

Manufacturing contamination prevention handbook

M-FS-19113 B72-10394 08

Technical management techniques for identification and control of industrial safety and pollution hazards

M-FS-21883 B72-10588 05

INEQUALITIES

Optimization technique for problems with an inequality constraint

ARC-10522 B72-10222 09

INERT ATMOSPHERE

Oxidation-resistant coatings for refractory metals used in inert atmospheres

NPO-11477 B70-10674 04

Practical method of diffusion-welding steel plate in air

LEWIS-11387 B71-10455 08

Polymeric coatings using electronic excitation

HQ-10698 B72-10257 04

Pressurized lighting system

KSC-10644 B73-10280 02

INERTIA

Calculation of the inertia tensor and center of gravity of complex bodies

NPO-10827 B70-10158 09

Volumetric leak detector

MSC-11325 B70-10302 07

Inertia diaphragm pressure transducer

XAC-2981 B71-10200 05

Hydrostatic liquid-bearing for precision gyro

M-FS-21138 B71-10207 07

Two-stage coaxial gas compressor

ARC-10426 B72-10210 06

Redirecting electromagnetic beams through wide angles

ARC-10602 B72-10307 03

Seat belt restraint system

ARC-10519 B72-10692 06

INERTIAL GUIDANCE

Numerical integration of second order differential equations

M-FS-20536 B71-10186 09

INERTIAL NAVIGATION

Performance evaluation system for inertial navigation equipment

MSC-13542 B71-10087 02

INERTIAL PLATFORMS

Precision machining of steel decahedrons

M-FS-21361 B72-10597 07

INERTIAL REFERENCE SYSTEMS

Separation of two bodies in space

NPO-10663 B70-10625 09

Microprogram scheme for automatic recovery from computer error

MSC-13387 B70-10642 09

Precision voltage regulator

NPO-11502 B72-10092 01

Inertial reference unit

NPO-11518 B72-10094 02

Temperature compensation of digital inertial sensors

NPO-13044 B74-10106 02

INFECTIOUS DISEASES

Post-operative cranial pressure monitoring system

ERC-10336 B70-10436 05

Bacterial adenosine triphosphate as a measure of urinary tract infection

GSFC-11092 B71-10051 05

INFLATABLE STRUCTURES

Inflatable stretcher to transport patients

HQ-10179 B70-10254 05

Strain gage load measuring device - A concept

MSC-13385 B70-10326 01

Safe suspension of specimens or clusters during dynamic testing - A concept

M-FS-15110 B70-10559 07

Simple, shock-free, quick-release connector - A concept

LEWIS-11178 B71-10146 07

Stable, inflatable life raft for high seas rescue operations

MSC-12393 B71-10167 05

Structural behavior of tapered inflated fabric cylinders under various loading conditions

MSC-15317 B71-10327 06

Lightweight inflatable material with low permeability

LANGLEY-10928 B73-10400 04

Highly-visible air-sea rescue marker

MSC-12564 B75-10166 05

Amplifying ribbon extensometer

LANGLEY-11825 B75-10300 06

INFORMATION

Information quality-control model

NPO-11431 B71-10281 06

Automated preventive maintenance program

GSFC-11408 B71-10500 09

INFORMATION MANAGEMENT

Source deck compression and update program (CAPS)

GSFC-11545 B72-10619 09

INFORMATION RETRIEVAL

Simultaneous random and sequential computer processing using an expanded sequential index

M-FS-20266 B70-10265 09

Slide checkout console

MSC-12318 B70-10290 02

Visual display panel functions as computer input/output device

ERC-10223 B70-10476 01

Information retrieval system

HQ-10426 B70-10556 09

A study of NACA and NASA published information of pertinence in the design of light aircraft

LANGLEY-10778 B70-10725 06

Pictorial display of materials and processes aids in fabricating complex assemblies

M-FS-24006 B71-10341 01

Video information system

M-FS-21711 B72-10267 09

Automatic computer subprogram selection from application-program libraries

- ALTLIB

LANGLEY-11124 B72-10607 09

Program for creating an operating system generation cross reference index (SGINDEX)

GSFC-11612 B72-10650 09

A comprehensive program for textual concordances and statistics

JSC-17484 B73-10049 09

Automated Data Management Information System (ADMIS)

KSC-10619 B73-10053 09

Medical Information Management System (MIMS): An automated hospital information system

GSFC-11540 B73-10073 09

Marshall information retrieval and display system (MIRADS)

M-FS-22536 B74-10043 09

Remote file inquiry (RFI) system

KSC-10837 B75-10155 09

Generation of key in cryptographic system for secure communications

NPO-13451 B75-10278 09

Computer system for library access

GSFC-11952 B75-10292 09

INFORMATION SYSTEMS

Information retrieval system

HQ-10426 B70-10556 09

Portable low-frequency vibration measuring and recording system

LANGLEY-10543 B71-10126 02

MAPS - a computerized management analysis and planning system

LEWIS-11349 B71-10321 09

Solid-state data interpretation system - A concept

M-FS-20587 B71-10366 02

Video information system

M-FS-21711 B72-10267 09

Automatic computer subprogram selection from application-program libraries

- ALTLIB

LANGLEY-11124 B72-10607 09

Program for creating an operating system generation cross reference index (SGINDEX)

GSFC-11612 B72-10650 09

- Automated Data Management
Information System (ADMIS)
KSC-10619 B73-10053 09
- INFORMATION THEORY**
Communications link for SDS 900 series computers
NPO-11161 B70-10163 02
Compression and R-wave detection of ECG/VCG data
MSC-14126 B72-10391 05
An improved learning decoder
MSC-14070 B72-10573 02
Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
- INFRARED DETECTORS**
Coplanar interconnection module
ERC-10237 B70-10378 01
Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 B71-10022 03
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Differential input preamplifier
ARC-10489 B72-10165 01
Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03
Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 B72-10606 09
Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04
High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04
High-sensitivity receiver for CO₂ laser communications
GSFC-11455 B73-10223 02
Automated electronic system for measuring thermophysical properties
LANGLEY-11883 B75-10160 03
- INFRARED IMAGERY**
Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02
- INFRARED INSPECTION**
Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
- INFRARED INSTRUMENTS**
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
- INFRARED LASERS**
Infrared tunable laser: A concept
ARC-10463 B75-10081 03
Laser-excited fluorescence for measuring atmospheric pollution
NPO-13231 B75-10275 02
- INFRARED RADIATION**
Noncontacting-optical-strain device
NPO-10778 B70-10292 03
Radiant heating concept efficient for light-transmitting windows
M-FS-20630 B70-10324 03
Heat-rejection windows for telescopes
M-FS-20634 B70-10386 04
- Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
Study of second breakdown in power transistors using infrared techniques
M-FS-20748 B71-10021 01
Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03
Thermal analysis system /TAS-1/ program
NPO-11849 B71-10386 09
Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
Unsupported thin film beam splitter
GSFC-10525 B72-10471 02
High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04
High-temperature-radiation analyzer
ARC-10565 B73-10017 03
Carrier suppression device for a heterodyne gas analyzer
ARC-10785 B73-10381 03
Solar-energy absorber: Active infrared (IR) trap
M-FS-22743 B73-10484 06
Solar-energy absorber: Active infrared (IR) trap without glass
M-FS-22744 B73-10485 06
- INFRARED SPECTRA**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 B70-10233 04
Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 B70-10612 04
Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03
A magnetically focused image tube employing an opaque photocathode
GSFC-11602 B73-10255 02
Optical detection of oil on water
ARC-10649 B73-10268 03
Spectrometer
GSFC-11694 B74-10181 03
- INFRARED SPECTROMETERS**
High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03
- Improved nondispersive infrared analyzer
ARC-10802 B74-10243 03
Viewfinder/tracking system for Skylab
MSC-14407 B75-10040 03
Tuneable diode laser spectrometer with integral grating
LANGLEY-11830 B75-10262 03
- INFRARED SPECTROPHOTOMETERS**
Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 B70-10551 04
Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03
- INFRARED SPECTROSCOPY**
Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03
A new method for the determination of thin film porosity
HQ-10673 B73-10286 01
Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03
A nondispersive infrared analyzer
ARC-10631 B75-10082 03
- INFRASONIC FREQUENCIES**
Volume measuring system
MSC-13972 B74-10271 03
- INGESTION (BIOLOGY)**
An ingestible temperature-transmitter
ARC-10583 B72-10275 01
- INGOTS**
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
- INHIBITORS**
Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03
Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04
- INITIATORS (EXPLOSIVES)**
Safe/armed explosive squib
XLA-10372 B70-10328 01
Simple non-destructive tests for electroexplosive devices
NPO-11563 B72-10315 01
- INJECTION**
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
Sprue cutoff tool for molded FCC plugs
M-FS-20236 B71-10421 08
Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03
- INJECTION LASERS**
Short-range laser obstacle detector
NPO-11856 B74-10101 03
High-energy lasers by using distributed reflection: A concept
NPO-13346 B75-10118 03
- INJECTORS**
Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06

- Nondestructive assessment of penetration of electron-beam welds
MSC-15955 B70-10466 08
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
Spray momentum measuring system
MSC-12305 B71-10137 05
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
Cast segment evaluation
M-FS-21354 B71-10333 08
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
Main tank injection pressurization program
LEWIS-11368 B72-10069 09
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07
Remote control flare stack igniter for combustible gases
M-FS-21675 B72-10352 07
Analysis and computer programs to calculate acoustic wave properties of baffled chambers
LEWIS-11529 B72-10577 09
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
Injector has no backslash
NPO-13208 B73-10461 07
- INJURIES**
Generalized safety equation - A concept
M-FS-20522 B71-10183 06
Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
- INLET FLOW**
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
Gas turbine combustor insensitive to compressor outlet distortion
LEWIS-10286 B70-10312 07
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07
Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
Miniature high pressure regulator
ARC-10428 B72-10211 07
Computer programs for calculating potential flow in propulsion system inlets
LEWIS-12152 B75-10018 09
- INLET NOZZLES**
Novel valve for reciprocating compressors - Concept
MSC-15060 B70-10160 07
Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06
- Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
- INLET PRESSURE**
Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
- INOCULATION**
Automatic agar tray inoculation device
LANGLEY-11074 B72-10637 05
- INORGANIC CHEMISTRY**
Radiochemical synthesis of pure anhydrous metal halides
LEWIS-11860 B73-10407 04
- INORGANIC COATINGS**
Integrating-sphere coating
GSFC-11214 B73-10403 04
- INORGANIC COMPOUNDS**
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
Initiation of polymerization by tetrabutylammonium p-lithiophenoxide
ARC-10553 B72-10223 04
Composite casting demonstration
M-FS-21668 B72-10266 04
- INORGANIC PEROXIDES**
Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04
- INPUT**
Antenna-array, phase quadrature tracking system
MSC-12205 B70-10095 02
Audio signal processor
MSC-12223 B70-10180 01
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
Biomedical recording system
MSC-13653 B70-10697 05
Digital simulation program improved
M-FS-01504 B70-10705 09
Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 B71-10069 01
Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01
A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02
A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02
Electronic ripple indicator
KSC-10162 B71-10170 01
- Voltage-controlled oscillator
ARC-10078 B71-10171 01
Wall attachment, fluoric crossover "AND" gate
XLA-07391 B71-10178 07
Accumulative weights program
M-FS-15066 B71-10181 09
Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
Pattern recognition technique
NPO-11337 B71-10187 06
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09
Improved relay chatter detector
NPO-10355 B71-10292 01
A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01
Microbial burden prediction model program
NPO-11709 B71-10401 09
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Automated preventive maintenance program
GSFC-11408 B71-10500 09
Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09
Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 B71-10517 02
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01
A differential ECG amplifier with single-ended output
ARC-10411 B72-10061 05
Snap dynamics
M-FS-21531 B72-10265 09
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
Universal dc signal conditioner
MSC-17526 B72-10510 02
An improved learning decoder
MSC-14070 B72-10573 02
Program to reduce the size of structural matrices
MSC-17619 B72-10625 09
FORTRAN read package
MSC-14161 B72-10750 09
- INPUT/OUTPUT ROUTINES**
Automated validation of a computer operating system
M-FS-14510 B70-10257 09
Multiport semiconductor devices
ERC-10293 B70-10448 01

- Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01
Concept for a distributed processor computer
ERC-10271 B70-10481 02
COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
Information retrieval system
HQ-10426 B70-10556 09
Expanded sun-look angle program
MSC-13176 B70-10602 09
Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09
Computerized toroidal transformer design
NPO-11115 B70-10606 09
Constant current load matches impedances of electronic components
GSFC-10982 B70-10643 01
Improved convolutional coding
MSC-13625 B70-10698 09
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
Stored program concept for analog computers
M-FS-20874 B71-10240 09
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09
Systems effectiveness evaluation program
HQ-10306 B72-10458 09
Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09
Redundant data management system
M-FS-21831 B72-10589 09
GPEDIT
GSFC-11308 B72-10620 09
Inexpensive programmable computer clock
LEWIS-11797 B73-10308 02
Input-output, expandable-parity network
HN-10728 B73-10479 02
- INSERTION**
Hot tap thermowell installation
MSC-12427 B71-10302 07
A concept for universal pliers
KSC-10768 B72-10685 07
- INSERTION LOSS**
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02
A manually set magnetic wire counter
AEC-10039 B72-10369 01
- INSERTS**
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
- INSPECTION**
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
- Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04
Holographic stress analysis
M-FS-20687 B70-10123 01
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Radiographic inspection specifications for electronic components
M-FS-20723 B71-10438 01
Scale factor gage for fiber optics inspection device
MSC-17361 B71-10496 07
Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
Detector for inspection of fire alarms
GSFC-11600 B73-10128 06
Improved technique for inspection of planar surfaces by microscopy and interferometry
NPO-11893 B73-10143 03
Handbook of cleaning requirements, procedures, and verification techniques for oxygen systems
LEWIS-11963 B73-10188 04
Detection of cracks in surface insulation
MSC-14187 B74-10095 04
Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01
Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03
Fast semiautomatic dimensional test set and data logger
MSC-19554 B75-10322 07
- INSPIRATION**
Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
- INSTALLATION MANUALS**
Strain gage installation manual
M-FS-18822 B70-10715 06
Flat conductor cable handbook
M-FS-21009 B71-10379 01
- INSTALLING**
Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08
Foolproof quick-release locking pin
M-FS-18495 B70-10409 07
Compression springs used for vibration isolation
NPO-11012 B70-10523 07
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01
Pipe installation technique avoids disturbing work areas
MSC-15581 B71-10093 06
Hot tap thermowell installation
MSC-12427 B71-10302 07
- Apparatus tests flexural durability of FCC
M-FS-20113 B71-10458 08
Tool expedites installation of BNC connectors
ARC-10327 B71-10480 07
Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08
Method of attaching insulation tiles
MSC-12619 B75-10104 04
- INSTRUCTORS**
Instruction manuals for radiographic nondestructive testing
M-FS-21350 B71-10156 06
- INSTRUMENT COMPENSATION**
Absolute focus lock for microscopes
LANGLEY-10184 B70-10728 07
A nondispersive infrared analyzer
ARC-10631 B75-10082 03
- INSTRUMENT ERRORS**
Electronic flaw simulator for eddy current probe calibration
NUC-10211 B70-10533 01
High-speed digital plotter
ARG-90001 B71-10049 02
Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07
Thermal scale modeling
M-FS-21268 B71-10432 03
- INSTRUMENT ORIENTATION**
Mechanical positioning device for Langmuir probe
NPO-11626 B73-10034 06
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
- INSTRUMENT PACKAGES**
Performance evaluation system for inertial navigation equipment
MSC-13542 B71-10087 02
Nondestructive leak testing
LANGLEY-11561 B73-10464 06
- INSULATED STRUCTURES**
Flexible shielding system for radiation protection
LRL-10028 B72-10500 03
- INSULATION**
Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Phenolic cutter for machining foam insulation
M-FS-14170 B70-10089 07
Optimizing insulation weight on cryogenic storage tanks
KSC-10399 B70-10102 03
Piezoelectric transducer
HQ-10548 B70-10157 01
Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
Ohmic diode
HQ-10534 B70-10200 01
Economic gas chromatograph system for subambient pressure gas sampling
M-FS-16298 B70-10220 02

Temperature-independent resistor for microelectronic circuits
 HQ-10382 B70-10276 01
 Low heat-gain cryogenic-liquid transfer system
 MSC-15165 B70-10306 07
 Open-celled polyurethane foam
 KSC-10517 B70-10349 04
 Flat conductor cable connector with contact separation seal
 M-FS-20757 B70-10387 01
 New hyperthermal thermosetting heterocyclic polymers
 LANGLEY-10221 B70-10403 04
 Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
 Strain compatibility tests for sprayed foam cryogenic insulation
 M-FS-16063 B70-10423 04
 Frost as an insulator
 NUC-11039 B70-10593 03
 Advances in electrometer vacuum tube design
 GSFC-10729 B70-10696 01
 Thermal and structural modeling of superinsulation
 M-FS-20324 B71-10019 02
 Hobel stripper for shielded and unshielded flat conductor cable
 M-FS-20120 B71-10060 08
 Torch kit for welding in difficult areas
 MSC-15704 B71-10070 08
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 B71-10079 04
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 Improved sheath removal technique for very small thermocouples
 LEWIS-11228 B71-10179 01
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
 Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
 KSC-10518 B71-10364 03
 Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
 GSFC-10835 B71-10375 08
 Nondestructive testing of bond integrity in foam insulation/aluminum composites
 M-FS-20786 B71-10507 06
 Electrical grounding bracket
 ARC-10041 B72-10045 01
 Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 B72-10177 02
 An electrohydrodynamic heat pipe
 ARC-10601 B72-10251 03
 Magnet-wire wrapping tool for integrated circuits
 NPO-11815 B72-10426 07
 Improved electrical spot terminals
 NPO-10034 B72-10492 01
 Slitting flat conductor cables with the single cutting edge slitter
 M-FS-20111 B72-10575 07
 Energy absorbing system for mechanical impacts
 NPO-10671 B72-10712 06
 Structural heat pipe
 GSFC-11619 B73-10364 06

Strain arrestor plate for mounting rigid insulating tiles
 JSC-14182 B73-10465 06
 Reusable silica surface-insulation material
 ARC-10721 B73-10504 04
 RF shielded connectors
 GSFC-11215 B73-10509 01
 Glass fiber addition strengthens low-density ablative compositions
 LANGLEY-11288 B74-10027 04
 Process for fabrication of stabilized aluminum phosphate fibers
 LANGLEY-11526 B74-10185 08
 Thin KAPTON polyimide films vacuum formed at high temperature retain their shape at temperatures to 450 K
 LEWIS-12412 B75-10016 04
 High-temperature, reusable surface insulation system
 MSC-14688 B75-10042 04

INSULATORS

Economical weatherproof helical antenna
 XKS-08485 B70-10016 01
 Improved solid state electron-charge-storage device
 HQ-10152 B70-10074 01
 Plasma conductivity gage
 ARC-10147 B70-10510 03
 High-temperature, long-term drift of platinum-rhodium thermocouples
 LEWIS-11111 B70-10552 01
 Folding tool for preparing FCC molded-plug terminations
 M-FS-20116 B71-10422 08
 Handling fixture for soldering round wires to FCC
 M-FS-20118 B71-10464 08
 Contact-resistance test probes: A concept
 M-FS-16891 B71-10471 01
 Improved high voltage insulator for use in vacuum
 LEWIS-11401 B72-10181 01
 Thin-film ultraviolet detector and spectrometer
 NPO-11432 B72-10701 03
 Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04
 Dielectric films improve life of polymeric insulators
 ARC-10892 B75-10084 04

INTAKE SYSTEMS

Integrated turbine-compressor provides air flow for cooling
 HQ-10442 B70-10295 07
 Small hydraulic turbine drives
 LEWIS-11064 B70-10416 07
 Concept for a gas operated actuator
 NPO-11340 B70-10516 07
 High amplitude sinusoidal pressure generator
 LEWIS-11241 B70-10635 07
 Twin-spool turbopumps for "low" net positive suction pressure operations
 LEWIS-11105 B70-10671 07
 Modular construction provides large volume storage facility in minimum space
 M-FS-13568 B71-10354 08
 Electronic switching circuit uses complementary non-linear components
 AEC-10060 B72-10236 01
 Automatic air flow control in air conditioning ducts
 GSFC-11445 B72-10490 06

Design criteria monograph on turbopump inducers
 LEWIS-11824 B72-10635 08
 Experimental study of flow distribution with circumferential manifolds
 LEWIS-11649 B72-10738 06
 Reversed cowl-flap thrust augmentor
 ARC-10754 B74-10046 06

INTEGRAL EQUATIONS

Non-symmetrical two dimensional scattering program
 NPO-11576 B71-10007 09
 Symmetrical two dimensional scattering program
 NPO-11578 B71-10008 09
 Radiation view factor program
 M-FS-21075 B71-10106 09
 Subroutines for evaluating single and multiple integrals using modified Romberg method
 NPO-11718 B71-10138 09
 Numerical integration of second order differential equations
 M-FS-20536 B71-10186 09
 Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
 LANGLEY-11048 B72-10067 09
 Indefinite integrals of products of some exponential and trigonometric functions
 LEWIS-11493 B72-10225 09
 Analysis of orbital heat transfer
 ARC-10844 B74-10116 03

INTEGRATED CIRCUITS

Digital frequency discriminator
 M-FS-14322 B70-10010 01
 Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01
 Continuously variable voltage-controlled phase shifter
 NPO-11129 B70-10073 01
 Integrated circuit flat-pack lead bender
 MSC-13489 B70-10117 01
 Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Technique for producing bipolar and MOS field effect transistors on a single chip
 MSC-13358 B70-10218 01
 Power semiconductor device with negative thermal feedback
 HQ-10577 B70-10262 01
 An investigation of the strength of aluminum wire used in integrated circuits
 NPO-11219 B70-10275 01
 Simple, accurate temperature-measuring instrument
 MSC-12327 B70-10303 01
 Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Integrated circuit random-access memory decoder
 ERC-10211 B70-10372 01
 Low-power integrated-circuit driver for ferrite-memory word lines
 ERC-10212 B70-10374 09
 Inexpensive automatic ranging for digital voltmeters and frequency counters
 NUC-10240 B70-10530 01
 Digital-voltage curve generator
 NPO-11104 B70-10590 02
 Electronic strain-level counter
 LANGLEY-10756 B70-10716 02

Miniature multicontact connectors
 LANGLEY-10740 B70-10724 01
 Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
 M-FS-20476 B71-10016 01
 Design and development of a fast scan infrared detection and measurement instrument
 M-FS-20749 B71-10022 03
 Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
 LANGLEY-10358 B71-10035 01
 PUZZLE - A program for computer-aided design of printed circuit artwork
 LRL-10050 B71-10122 09
 Triangular-wave generator with controlled sweep polarity
 ARC-10332 B71-10166 03
 Voltage-controlled oscillator
 ARC-10078 B71-10171 01
 Automatic cross-sectioning and monitoring system locates defects in electronic devices
 GSFC-11221 B71-10221 01
 Catheter transducer and circuit
 ARC-10132 B71-10234 01
 Computer-aided design of large-scale integrated circuits - A concept
 M-FS-20600 B71-10238 09
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 B71-10298 02
 Data sampling system for monitor and control station
 M-FS-20948 B71-10299 02
 Novel shift register eliminates logic gates and power switching circuits
 GSFC-10517 B71-10322 01
 Double phase-lock loop with rapid transient response - A concept
 GSFC-10864 B71-10349 01
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01
 Television multiplexing system
 KSC-10654 B71-10391 02
 Waveshaping electronic circuit
 M-FS-14916 B71-10429 01
 Radiographic inspection specifications for electronic components
 M-FS-20723 B71-10438 01
 Low-frequency triangular wave generator
 ARC-10259 B71-10469 01
 Pulse width-pulse rate modulator
 ARC-10025 B71-10497 01
 Coaxial inverted geometry epitaxial transistor
 ARC-10330 B72-10056 01
 Solid state television camera has no imaging tube
 M-FS-21553 B72-10254 02
 Nondestructive testing of microtab welds
 ARC-10176 B72-10296 02
 Microminiature gas chromatographic column
 ARC-10594 B72-10306 04
 Magnet-wire wrapping tool for integrated circuits
 NPO-11815 B72-10426 07
 Wide-range nuclear magnetic resonance detector
 LEWIS-11513 B72-10478 03

Universal dc signal conditioner
 MSC-17526 B72-10510 02
 Improved optical filters for automated visual inspection
 HQ-10720 B72-10521 03
 Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
 Redundancy approaches in bubble domain memories
 M-FS-21915 B72-10643 01
 An approach to real-time process control of semiconductor wire-bonding
 M-FS-21558 B72-10644 08
 Dual field alignment display and control for electron micropattern generator
 M-FS-22118 B72-10646 01
 Two-speed deflection system for electron micropattern generator
 M-FS-22117 B72-10668 02
 Low distortion automatic phase control circuit
 M-FS-21671 B72-10682 02
 Development of chip passivated monolithic complementary MISFET circuits with beam leads
 M-FS-22264 B72-10696 01
 Glass encapsulation provides extra protection for IC semiconductor devices
 M-FS-21310 B73-10054 01
 Gyrator circuit using field effect transistors
 M-FS-21433 B73-10161 02
 Data multiplexer using a tree switch
 NPO-11333 B73-10289 02
 Data-matched filter
 JSC-14264 B73-10449 02
 Plug-in integrated/hybrid circuit
 M-FS-24470 B73-10476 01
 Input-output, expandable-parity network
 HN-10728 B73-10479 02
 Binary-selectable detector holdoff circuit
 M-FS-22898 B73-10487 02
 Compact telemetry package for remote monitoring of neutron responses in animals
 NPO-11887 B74-10103 05
 Integrated structure vacuum tube: A Concept
 ARC-10445 B74-10110 01
 Error-correcting codes for high-speed digital computers
 M-FS-22887 B74-10147 02
 Side wire feed for welding apparatus
 NPO-13148 B74-10214 08
 A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
 LANGLEY-11536 B74-10234 01
 Straight-line IC removal tool
 NPO-13157 B74-10281 01
 One-dimensional multimode and multistate oscillator: A concept
 HQ-10851 B75-10088 01
 Solar-cell interconnects
 M-FS-23257 B75-10231 04
 Trigger circuit forces immediate synchronization of free-running oscillator
 NPO-13646 B75-10337 01

INTEGRATORS

Digital data transition tracking loop improves data reception
 NPO-10844 B70-10009 02
 Active resistance capacitance filter design
 ARC-10020 B70-10034 01

Wide-range tracking oscillator generates phase and frequency coherent output
 M-FS-14518 B70-10451 02
 Integrator for on-line measurement of buffet signals
 LANGLEY-10627 B70-10639 02
 Ferrite attenuator modulation improves antenna performance
 NPO-12011 B70-10702 01
 Measurement of surface roughness slope
 LEWIS-11080 B70-10722 01
 Active parallel redundancy for electronic integrator-type control circuits
 NUC-10231 B71-10040 01
 Microwave dosimeter - A concept
 HQ-10407 B71-10075 01
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Triangular-wave generator with controlled sweep polarity
 ARC-10332 B71-10166 03
 Voltage-controlled oscillator
 ARC-10078 B71-10171 01
 A 20 kHz power oscillator
 LEWIS-11319 B71-10174 01
 Variable order integrators for the numerical solution of ordinary differential equations
 NPO-11643 B71-10248 09
 A real-time statistical time-series analyzer
 MSC-12428 B71-10276 02
 Precision voltage regulator
 NPO-11502 B72-10092 01
 Electronic integrator for gyro rate output voltages
 NPO-11499 B72-10555 01
 Operational slope-limiting circuit
 NPO-11773 B73-10346 01

INTEGRITY

Improved insulating materials effective at extremely high temperatures
 NPO-12067 B71-10289 04

INTENSIFIERS

Improved intensifying screen reduces X-ray exposure
 AEC-10090 B72-10232 03

INTENSITY

Photosensitive plastic used to produce three-dimensional casting patterns
 LANGLEY-10742 B71-10127 08
 Analytical procedure for estimating reliability of randomly excited structures
 NPO-11618 B71-10189 06
 High-intensity source of extreme ultraviolet
 HQ-10754 B72-10528 03
 High field CdS detector for infrared radiation
 LANGLEY-11027 B72-10725 04

INTERFACES

Foaming-electrolyte fuel cell
 HQ-10147 B70-10097 01
 Temperature-controlled fluidic device A concept
 HQ-10446 B70-10167 03
 Heat-barrier coatings for combustion chambers
 M-FS-18618 B70-10363 07
 Technique for depositing silicon dioxide on indium arsenide improves adhesion
 ERC-10130 B70-10475 04
 Plasma conductivity gage
 ARC-10147 B70-10510 03

Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01
Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07
Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08
Automatic transmission line monitor
KSC-10385 B71-10288 02
Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
A study of nitride devices for computer memory applications
M-FS-20971 B71-10350 03
High-speed fault-tolerant telemetry/computer interface
NPO-13139 B74-10296 02
Computer/computer interface
NPO-13428 B75-10326 02

INTERFACIAL TENSION

Volumetric leak detector
MSC-11325 B70-10302 07
Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
Effect of size on cracking of materials
NPO-11602 B71-10158 04
Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Potentiometer, constant tension and lubrication device
KSC-10723 B72-10541 02

INTERFERENCE

Laser method for finding axis of rotation
ARC-10388 B70-10439 03
Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03

INTERFERENCE GRATING

Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
GSFC-11860 B73-10516 03
Tuneable diode laser spectrometer with integral grating
LANGLEY-11830 B75-10262 03

INTERFERENCE LIFT

Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
ARC-10833 B74-10113 09

INTERFEROMETERS

Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
Multipass holographic interferometer improves image resolution
HQ-10499 B70-10426 03
Ultraviolet interferometer
HQ-10546 B71-10026 03
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02

Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
Interferometric rotation sensor
ARC-10278 B72-10274 03
Interferometer using RF switching matrix
GSFC-11051 B72-10462 01
Unsupported thin film beam splitter
GSFC-10525 B72-10471 02
Real time optical figure sensor
M-FS-22123 B73-10169 02
Linear kinematic air bearing
NPO-13151 B73-10456 06
Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
HQ-10844 B75-10087 03
Developments in spectrophotometry I: An instrument for high-resolution measurements of optical intensity and polarization
NPO-13604 B75-10332 03

INTERFEROMETRY

Finite fringe hologram
HQ-10347 B70-10271 03
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 B72-10209 03
Radio direction finder
NPO-11573 B72-10508 02
Vibration measurement by pulse differential holographic interferometry
LANGLEY-11092 B73-10075 03
Holographic testing with a double reference beam
JSC-17959 B73-10086 03
Improved technique for inspection of planar surfaces by microscopy and interferometry
NPO-11893 B73-10143 03
Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06
Read-only optical storage medium
M-FS-23169 B75-10305 03

INTERMEDIATE FREQUENCIES

Block-coded communications
NPO-11397 B70-10242 02
Signal phase switches offer greater dynamic range
NPO-10709 B70-10393 01
Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 B70-10457 02
Signal to noise measurement circuit
GSFC-11239 B72-10102 01

INTERMEDIATE FREQUENCY

AMPLIFIERS

Telemetry receiver
NPO-10746 B70-10008 02
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01

Fabrication of electroacoustic RF amplifiers
ERC-10266 B70-10460 01
New broadband square-law detector
NPO-13410 B75-10180 02

INTERMETALLICS

Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Superconductor transition temperatures study
M-FS-21247 B71-10385 03
New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04

INTERMITTENCY

Oxygen pressure control for electrolysis cells
ARC-10250 B72-10074 02

INTERMODULATION

Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
Microwave diode amplifiers with low intermodulation distortion
GSFC-11668 B75-10213 01

INTERNAL COMBUSTION ENGINES

Novel valve for reciprocating compressors - Concept
MSC-15060 B70-10160 07
Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
Hydraulic valve lifter remover
M-FS-21377 B72-10110 07
Fluidic systems may improve combustion in automotive engines
ARC-10582 B72-10250 06
Solid-state motor control and monitor system
MSC-12721 B75-10316 02

INTERNATIONAL SYSTEM OF UNITS

Design parameters for toroidal and bobbin magnetics
NPO-13441 B73-10459 01

INTERPLANETARY COMMUNICATION

Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01

INTERPLANETARY TRAJECTORIES

Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09

INTERPOLATION

Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 B70-10457 02
Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05
Hybrid computer techniques for solving partial differential equations
M-FS-21386 B71-10424 09
Third order digital-to-analog converter
MSC-12458 B72-10030 02

INTERRUPTION

Portable circuit-interruption indicator
KSC-10546 B71-10246 02
Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09

INTERSTICES

Radial heat flux transformer
NPO-10828 B71-10311 03

INTERVALS

Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02
Calibration-interval adjustment indicator - A concept
M-FS-18693 B71-10309 01
Double phase-lock loop with rapid transient response - A concept
GSFC-10864 B71-10349 01

INTRAVENOUS PROCEDURES

Heart catheter cable and connector
ARC-10406 B72-10200 05
Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05
Regulator for intravenous feeding
ARC-10758 B75-10083 05

INVARIANCE

Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03

INVENTORY CONTROLS

Limited life item management
M-FS-24020 B71-10196 06
TCB operation supply inventory system /TCBSYS/
GSFC-11306 B71-10314 09
Systems management techniques and problems
M-FS-21401 B71-10361 01

INVENTORY MANAGEMENT

Logistics hardware and services control system
KSC-10819 B73-10418 09

INVERTERS

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Improved convolutional coding
MSC-13625 B70-10698 09
Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01
Improved relay chatter detector
NPO-10355 B71-10292 01
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
Illumination control system
ARC-10527 B72-10167 02
Operational slope-limiting circuit
NPO-11773 B73-10346 01
Variable-frequency inverter controls torque, speed, and braking in ac induction motors
M-FS-22088 B73-10525 02
DC-to-AC inverter ratio failure detector
NPO-13160 B74-10282 01
Trigger circuit forces immediate synchronization of free-running oscillator
NPO-13646 B75-10337 01

INVESTIGATION

Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
Flammability study of materials in oxygen environments
M-FS-23306 B75-10310 04
Quality control of microelectronic wire bonds
M-FS-23327 B75-10312 01

INVESTMENT CASTING

Directionally solidified superalloy
HQ-10522 B70-10058 04
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05

INVISCID FLOW

Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
LANGLEY-11048 B72-10067 09
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09

INVOLUNTARY ACTIONS

Scanning technique for tracking small eye-movements
ARC-10488 B72-10220 05

IODATES

Determination of nitrogen in titanium nitride
LEWIS-11046 B70-10588 04

IODIDES

Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04

IODIMETRY

Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05

IODINE

Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
Airborne spectrometer senses several gases
MSC-13234 B70-10438 03
Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04
Halogenation of microcapsule walls
ARC-10410 B72-10161 04
Iodine generator for disinfecting reclaimed water
MSC-14632 B74-10153 05

IODINE ISOTOPES

Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05

ION ACCELERATORS

High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04

ION BEAMS

Improved dispensing targets for ion beam particle generators
NPO-13112 B74-10108 03
Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03

ION CURRENTS

Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03
Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
Study of fluid flow by charged particles
ARC-10925 B75-10028 03

ION EMISSION

High-intensity source of extreme ultraviolet
HQ-10754 B72-10528 03

ION ENGINES

Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01

ION EXCHANGE**ELECTROLYTES**

Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
Single crystal tubes of beta alumina
LEWIS-11844 B73-10316 04

ION EXCHANGE RESINS

Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04
A silver ion water sterilization system
MSC-15734 B71-10278 04
Improved ion exchange membrane
NPO-13309 B75-10117 04
Improved polyelectrolyte for ion exchange fibers
NPO-13530 B75-10280 04

ION EXCHANGING

Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04
Improved polyelectrolyte for ion exchange fibers
NPO-13530 B75-10280 04

ION EXTRACTION

Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 B75-10185 03

ION IMPACT

Cathode for use with low density gases
HQ-10687 B72-10530 01
Prevention of cathode damage from positive ion bombardment
HQ-10688 B72-10654 03

ION IMPLANTATION

Silicon on sapphire for ion implantation studies
LANGLEY-11415 B73-10522 04

ION PRODUCTION RATES

A study of radiation environment in space and its biological effects
HQ-10798 B72-10662 03

ION PUMPS

Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
Baffle to confine glow discharge in ion pump
M-FS-21575 B72-10324 03

ION RECOMBINATION

Induction heating simplifies metal evaporation for ion plating
LEWIS-12595 B75-10288 03

ION SOURCES

Improved magnetron cold-cathode ion source
LANGLEY-10387 B70-10023 02
Photoionization mass spectrometer
HQ-10167 B70-10113 03
High temperature ion source
ERC-10197 B70-10379 03
Comparative performance of double-focus and quadrupole mass spectrometers
NPO-11689 B72-10702 03
Ion masking improves resolution in quadrupole mass spectrometers
GSFC-11406 B73-10181 03

Graphite ionization vacuum gauge
 LANGLEY-11338 B74-10136 03

IONIC COLLISIONS
 Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
 M-FS-21924 B72-10316 01

IONIC REACTIONS
 Improved photoionization mass spectrometer
 LANGLEY-10180 B70-10402 04
 Chemical-ionization visible and ultraviolet gas lasers: A concept
 NPO-13289 B75-10115 03

IONIZATION
 Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
 HQ-10389 B70-10108 03
 Photoionization mass spectrometer
 HQ-10167 B70-10113 03
 A program for computing shock-tube gas dynamic properties
 NPO-11068 B70-10133 09
 Ultrasonic propagation in gases at high temperatures
 HQ-10498 B70-10137 03
 Improved plasma accelerator
 ARC-10109 B71-10454 03
 Device for measuring electric fields
 ARC-10164 B72-10148 03
 Direct analysis of hydrogen/deuterium mixtures: A concept
 NPO-11322 B72-10244 03
 Ion plating seals microcracks or porous metal components
 LEWIS-11657 B72-10397 04
 New meter probes provide protection from high current power sources at potentials up to 600 volts
 LANGLEY-10804 B72-10455 01
 Ion masking improves resolution in quadrupole mass spectrometers
 GSFC-11406 B73-10181 03

IONIZATION CHAMBERS
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01
 Improved electron emitter
 LEWIS-10814 B71-10388 03
 Simple dynamic electromagnetic radiation detector
 LEWIS-11159 B72-10227 03
 Fast response densitometer for measuring liquid density
 M-FS-14478 B72-10664 02
 Negative ion spectrometry for detecting nitrated explosives
 NPO-13082 B74-10276 02
 Micrometeoroid velocity-and-trajectory analyzer
 GSFC-11889 B74-10286 01

IONIZATION CROSS SECTIONS
 Estimating sensitivity of vacuum gages
 LEWIS-11007 B70-10099 03
 Method of predicting ionization-type vacuum gage sensitivity for various gases
 LEWIS-12056 B73-10409 03

IONIZATION GAGES
 An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 B70-10611 03
 Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03

Ion-tracer anemometer
 M-FS-21399 B73-10151 04
 Method of predicting ionization-type vacuum gage sensitivity for various gases
 LEWIS-12056 B73-10409 03
 Graphite ionization vacuum gauge
 LANGLEY-11338 B74-10136 03

IONIZATION POTENTIALS
 Electron energy analyzer
 HQ-10373 B70-10138 02
 Improved photoionization mass spectrometer
 LANGLEY-10180 B70-10402 04
 Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
 M-FS-21924 B72-10316 01

IONIZED GASES
 Plasma conductivity gage
 ARC-10147 B70-10510 03
 Device measures conductivity and velocity of ionized gas streams
 XAC-05695 B71-10235 03
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 Direct analysis of hydrogen/deuterium mixtures: A concept
 NPO-11322 B72-10244 03
 Ion-tracer anemometer
 M-FS-21399 B73-10151 04
 Method of predicting ionization-type vacuum gage sensitivity for various gases
 LEWIS-12056 B73-10409 03
 Modulated hydrogen-ion flame detector: A concept
 ARC-10322 B74-10071 03

IONIZERS
 Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03

IONIZING RADIATION
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01
 Radiation hardening of metal-oxide semi-conductor (MOS) devices by boron
 GSFC-11425 B74-10026 01

IONS
 Mass spectrometer detects high molecular weight components
 HQ-10477 B70-10057 01
 Apparatus for simultaneous ion counting and current recording in mass spectrometry
 LEWIS-11103 B70-10471 03
 An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 B70-10611 03
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08
 Improved electron emitter
 LEWIS-10814 B71-10388 03
 Introduction of lithium into the front surface of solar cells
 NPO-11404 B72-10086 02
 Mass separator for low velocity ions
 ARC-10375 B72-10123 03
 Sputter etching of hemispherical bearings
 HQ-10712 B72-10534 08
 GaAs transistors formed by Be or Mg ion implantation
 LANGLEY-11204 B73-10442 01

IRIDIUM
 High-temperature oxidation and erosion-resistant refractory coatings
 LEWIS-11221 B70-10634 04
 Low temperature catalytic ignition of hydrogen and oxygen
 ARC-10492 B72-10127 03

IRISES (MECHANICAL APERTURES)
 Vibration detection using lasers
 ARC-10389 B71-10145 03
 The thin film microwave iris
 LANGLEY-10511 B72-10548 02

IRON
 Cryogenic thermocouple calibration tables
 NUC-10551 B70-10197 03
 Progress in research on chlorate candle technology
 MSC-13409 B70-10258 04
 High precision cryogenic thermal conductivity standards
 NUC-10555 B70-10310 04
 Effects of hydrogen on ELI titanium alloy
 Ti-5Al-2.5Sn B70-10366 04
 Extended-life magnetic recording heads
 GSFC-10097 B70-10521 01
 Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
 Small size transformer provides high power regulation with low ripple and maximum control
 M-FS-16709 B71-10193 01
 Copper/nickel eutectic brazing of titanium
 ARC-10337 B71-10525 08
 Long-term drift of thermocouples at 1600 K
 LEWIS-11471 B72-10176 01
 Wide-range dynamic pressure sensor
 ARC-10263 B72-10196 03
 Magnetic-doped alloys with very large Seebeck coefficients
 M-FS-21410 B72-10318 04
 Catalytic reactor with disposable cartridge
 ARC-10747 B73-10376 04

IRON ALLOYS
 Preparation of magnetic ferrofluids in alternative carrier liquids
 GSFC-10159 B70-10011 04
 Effects of high pressure hydrogen on metals
 M-FS-18612 B70-10162 04
 Intermolecular bonding of metals or alloys by thermochemical decomposition
 M-FS-13823 B70-10194 08
 Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
 M-FS-18427 B70-10199 04
 Oxidation resistant iron and nickel alloys for high temperature use
 LEWIS-10936 B70-10210 04
 Coercive force of thin magnetic films
 NPO-10750 B70-10221 03
 Mechanism and kinetics of aging in Inconel 718
 M-FS-18775 B70-10261 04
 Metal alloy resistivity measurements at very low temperatures
 NUC-10557 B71-10104 04

IRON CHLORIDES
 Determination of nitrogen in titanium nitride
 LEWIS-11046 B70-10588 04

IRON OXIDES

- Improved fire-resistant coatings
GSFC-10072 B71-10198 04
Sheet plastic filters for solar cells
NPO-11464 B72-10090 04

IRRADIANCE

- A compact spectroradiometer for solar simulator measurements
HQ-10683 B72-10327 03
Uniform high irradiance source
LEWIS-12360 B75-10008 03

IRRADIATION

- Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
Liquid-hydrogen/nuclear-radiation resistant seals
M-FS-21364 B71-10340 03
Sputter etching of hemispherical bearings
HQ-10712 B72-10534 08
Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03
High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04
Improved dispensing targets for ion beam particle generators
NPO-13112 B74-10108 03

IRRIGATION

- Design for waste-management system
JSC-14486 B73-10428 05

IRRITATION

- Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04

ISENTROPIC PROCESSES

- Compressed gas handbook
KSC-10662 B71-10272 03
Computer program for natural gas flow through nozzles
LEWIS-11534 B72-10362 09

ISOCYANATES

- Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 B70-10551 04
Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
Diamine curing agents for polyurethanes
LANGLEY-11829 B75-10261 08

ISOLATION

- Hermetically sealed motion transmitter
MSC-17348 B71-10328 07
Shielding method for polycrystalline and epitaxy growths
M-FS-20162 B71-10434 04
Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05
Hermetic isolation valves
ARC-10505 B72-10013 06
Multiple reaction mass and isolation system
M-FS-24119 B72-10441 06
Sterile chamber operation with bio-isolator suit system
LANGLEY-11054 B72-10547 05

ISOLATORS

- Vapor feeding of liquid metal cathodes
HQ-10213 B70-10168 03
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01

- EKG isolator
M-FS-21236 B71-10124 05
Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01
Multiple reaction mass and isolation system
M-FS-24119 B72-10441 06
Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 B74-10039 07
Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01

ISOMERIZATION

- Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03

ISOMERS

- Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03

ISOMORPHISM

- Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09

ISOSTATIC PRESSURE

- High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08

ISOTENSOID STRUCTURES

- Axisymmetric and cylindrical isostable structures - A concept
NPO-12049 B71-10446 06

ISOTHERMAL FLOW

- Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
Compressed gas handbook
KSC-10662 B71-10272 03

ISOTHERMAL PROCESSES

- Atmospheric composition affects heat- and mass-transfer processes
HQ-10271 B70-10094 04
Design method for adsorption beds
HQ-10269 B70-10294 04
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04

ISOTHERMS

- Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09

ISOTOPIC LABELING

- Computer system for monitoring radiorepirometry data
ARC-10784 B73-10494 05

ISOTROPISM

- Unidirectional composite stiffening
HQ-10266 B70-10054 04
Isogrid structure
M-FS-21567 B72-10323 06

ISOTROPY

- New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06

- Producing graphite with desired properties
NUC-11001 B71-10042 04
Isotropic pyrolytic carbons
ARC-10532 B72-10029 04

ITERATION

- The determination of stability domains for nonlinear dynamical systems
M-FS-14832 B70-10539 03
Computerized toroidal transformer design
NPO-11115 B70-10606 09
Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09
Computer program for thermal analysis of shadow shields in a vacuum
LEWIS-11236 B71-10115 09
Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 B71-10151 09
Rotordynamic response analysis program
HQ-10579 B71-10211 09
Fast carry accumulator design
M-FS-20902 B71-10274 01
Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
Snap dynamics
M-FS-21531 B72-10265 09

ITERATIVE NETWORKS

- Nonequal iteration directional filters permit selective clearance of ripples in passband circuits
ERC-10313 B70-10385 01
Man-machine interactive system simplifies computer-aided circuit design
LANGLEY-10711 B70-10660 09
Topological solution of bilateral switching networks
ARC-10294 B72-10055 01
Minimum switching network for generating the weight of a binary vector
NPO-11590 B73-10274 09

ITERATIVE SOLUTION

- Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09
Tracking antenna deformation program
GSFC-11191 B71-10017 09
Computer method for identification of boiler transfer functions
LEWIS-11808 B72-10582 09
Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09
Computer program to determine roots of polynomials by ratio of successive derivatives
LEWIS-11809 B73-10244 09

J**J-2 ENGINE**

- Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09

JACKETS

- Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07

- Technique for in-place welding of aluminum backed up by a combustible material
LEWIS-11328 B71-10257 08
Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
- JACKS (LIFTS)**
Redundant screwjack
JSC-19200 B73-10070 07
- JACOBI MATRIX METHOD**
Frame modal analysis
MSC-17562 B71-10414 09
- JET AIRCRAFT**
A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
- JET AIRCRAFT NOISE**
Reduction of fan noise: A concept
ARC-10312 B72-10040 06
Evaluation of jet engine noise
M-FS-21416 B72-10263 03
Computer programs for handling propulsion system noise data
LEWIS-12285 B75-10019 09
Sound separation probe
LEWIS-12507 B75-10286 03
- JET AMPLIFIERS**
Fluidic pressure regulators
ARC-10474 B72-10162 06
- JET ENGINE FUELS**
Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04
Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04
Properties of air and combustion products of fuel with air
LEWIS-12402 B75-10004 03
- JET ENGINES**
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04
Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01
Attitude controls for VTOL aircraft
XAC-8972 B71-10202 05
Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
Reduction of fan noise: A concept
ARC-10312 B72-10040 06
Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04
Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
Mechanical coupling for high cyclic loading
LEWIS-11690 B74-10001 06
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
- Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03
High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04
Minimization of jet and core noise by rotation of flow
ARC-10712 B75-10131 06
Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 B75-10246 04
Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
LEWIS-12554 B75-10290 04
- JET EXHAUST**
Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation
LEWIS-11512 B72-10434 07
Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09
- JET FLAPS**
Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
- JET FLOW**
Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
Thrust vector control for V/STOL aircraft
ARC-10788 B74-10049 06
Improved aircraft reaction nozzles
ARC-10906 B75-10284 06
- JET IMPINGEMENT**
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- JET MIXING FLOW**
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
Computer program for predicting symmetric jet mixing of compressible flow in jets
ARC-10730 B73-10263 09
Investigations of multiple jets in a crossflow
LEWIS-12102 B75-10149 03
- JET NOZZLES**
Attitude controls for VTOL aircraft
XAC-8972 B71-10202 05
- JET PROPULSION**
Evaluation of jet engine noise
M-FS-21416 B72-10263 03
Turbine design review text
LEWIS-12560 B75-10287 06
- JET PUMPS**
Computer programs for the design of liquid-to-liquid jet pumps
LEWIS-11679 B72-10584 09
- JET THRUST**
Improved aircraft reaction nozzles
ARC-10906 B75-10284 06
- JET VANES**
Vented vectoring-nozzle for STOL and V/STOL aircraft
ARC-10839 B74-10058 06
Tailor making high performance graphite fiber reinforced PMR polyimides
LEWIS-12416 B75-10137 04
- JETTISON SYSTEMS**
Jettisoning system for a parachute's canister
NPO-11236 B70-10398 06
- JIGS**
Fiberglass honeycomb elements formed quickly and cheaply
LANGLEY-10125 B70-10342 08
Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08
Self-adjusting assembly jig
LEWIS-12034 B73-10250 07
Universal drill jig
M-FS-24464 B73-10324 07
Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06
- JOINING**
Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08
Protective coating for salt-bath brazing
LEWIS-90255 B71-10381 08
Aluminum foil interconnects for solar cell panels
ARC-10374 B72-10058 08
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
A new concept for joining dissimilar composites
M-FS-24307 B73-10148 04
Materials data handbook on titanium 6Al-4V
M-FS-22796 B73-10372 04
Materials data handbooks on aluminum alloys
M-FS-22798 B73-10373 04
Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04
Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04
Solar-cell interconnects
M-FS-23257 B75-10231 04
- JOINTS (ANATOMY)**
Improved orthopedic arm joint
M-FS-21611 B71-10485 05
Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 B75-10148 05

JOINTS (JUNCTIONS)

- Nonlinear damping in structures
 M-FS-20701 B70-10341 03
 Foolproof quick-release locking pin
 M-FS-18495 B70-10409 07
 X-connectors for tubing - Feasibility study
 M-FS-20827 B70-10418 07
 Automatic, computerized testing of bolts
 NPO-11090 B70-10657 06
 Welded polypropylene liners for large descaling tanks
 M-FS-18711 B71-10012 07
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
 Ultrasonics used for high-precision nondestructive inspection of brazed joints
 NUC-10352 B71-10045 08
 Torch kit for welding in difficult areas
 MSC-15704 B71-10070 08
 Remote coupling of air lines
 NUC-10225 B71-10101 07
 Small size transformer provides high power regulation with low ripple and maximum control
 M-FS-16709 B71-10193 01
 Ultrasonic scanning system for in-place inspection of brazed-tube joints
 M-FS-21166 B71-10227 06
 Low-temperature bonding of electronic connections
 M-FS-20909 B71-10253 08
 Spin vector control of a spinning space station
 M-FS-21333 B71-10296 09
 Strong, easy-to-mold, spiral buttress thread
 LANGLEY-10755 B71-10336 08
 Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
 KSC-10518 B71-10364 03
 Frame modal analysis
 MSC-17562 B71-10414 09
 Handling fixture for soldering round wires to FCC
 M-FS-20118 B71-10464 08
 Joint preload properties of structural threaded fasteners
 M-FS-21453 B71-10531 08
 Space suit may have orthotic applications
 ARC-10275 B72-10297 05
 Improved high-temperature gimbal joint
 LEWIS-11705 B72-10489 06
 Flexible thermal device
 M-FS-21630 B72-10612 04
 Portable beveling tool
 M-FS-16863 B72-10678 07
 High torque bellows seal rotary drive
 LEWIS-11813 B72-10681 07
 Thermal contact resistance in a non-ideal joint
 M-FS-21775 B73-10105 03
 Automatic soldering machine
 MSC-19401 B74-10193 06
 Explosive welding technique for joining aluminum and steel tubes
 MSC-14721 B74-10272 08
- JOSEPHSON JUNCTIONS**
 Superconducting quantum-interference devices
 M-FS-23163 B75-10097 03

JOULE-THOMSON EFFECT

- Transfer of gaseous oxygen from high-pressure containers and the Joule-Thomson inversion
 KSC-10721 B73-10483 04

JOURNAL BEARINGS

- Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
 LEWIS-11152 B71-10173 07
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 B71-10509 09
 A flexible cruciform journal bearing mount
 LEWIS-11035 B73-10001 07
 Design curves for optimizing stability of herringbone-grooved journal bearings
 LEWIS-12442 B75-10063 06

JP-5 JET FUEL

- Advanced protective coating for superalloys
 LEWIS-11473 B72-10150 04

JUMPERS

- Ground computer test trap
 KSC-10574 B70-10561 09

JUNCTION DIODES

- Nonvolatile read/write memory element - A concept
 GSFC-10994 B71-10347 01

JUNCTION TRANSISTORS

- Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
 LANGLEY-10358 B71-10035 01
 Externally programmed variable timer
 M-FS-20776 B71-10437 04
 Overlap diffusion for increasing phototransistor dynamic range
 M-FS-20407 B72-10347 01

JUNCTIONS

- Wall attachment, fluoric crossover "AND" gate
 XLA-07391 B71-10178 07

JUPITER (PLANET)

- Differential input preamplifier
 ARC-10489 B72-10165 01

JUPITER PROJECT

- Reliability analysis based on operational success criteria
 ARC-10490 B72-10214 09

K**KALMAN FILTERS**

- Variable dimension automatic synthesis programs (VASP)
 ARC-10616 B72-10065 09

KALMAN-SCHMIDT FILTERING

- Theory and application of Kalman filtering
 M-FS-20491 B70-10309 06
 A study of accuracy in selected numerical-analysis integration techniques
 MSC-14802 B75-10273 09

KAOLINITE

- Improved fire-resistant coatings
 GSFC-10072 B71-10198 04
 Protective coating for salt-bath brazing
 LEWIS-90255 B71-10381 08

KAPTON (TRADEMARK)

- Thin KAPTON polyimide films vacuum formed at high temperature retain their shape at temperatures to 450 K
 LEWIS-12412 B75-10016 04

KEL-F

- Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
 ARG-10412 B70-10233 04

KEPLER LAWS

- Derivation of a general perturbation solution - Its application to determination of orbit
 MSC-13377 B70-10442 03

KEROSENE

- Improved smoke generator for low-speed wind tunnels
 LANGLEY-10885 B71-10337 06

KERR CELLS

- Concept for high speed computer printer
 KSC-10373 B70-10484 09
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03

KERR ELECTROOPTICAL EFFECT

- Q-switched, cavity-dumped, mode-locked laser
 GSFC-11509 B73-10175 03

KETONES

- Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04
 Inexpensive, removable coating for plaster tooling
 MSC-15819 B70-10666 04

KIDNEYS

- Small, low cost, artificial kidney
 AEC-10011 B72-10371 05
 New urea-absorbing polymers for artificial kidney machines
 NPO-13620 B75-10336 04

KINETIC ENERGY

- Dry-frictional shock absorber
 NPO-11212 B70-10040 07

KINETIC THEORY

- Flame zone of a composite propellant expanded by a laser source
 LANGLEY-10660 B71-10335 03

KINETICS

- Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
 HQ-10389 B70-10108 03
 Kinetic inductance measured in a superconducting wire
 ERC-10305 B70-10491 03
 Analytical methods for bacterial kinetics studies
 LRL-10011 B71-10192 05
 Statistical characterization of phenolic-novolac structures
 ARC-10393 B71-10255 04

KIRKENDALL EFFECT

- Inhibiting Kirkendall void growth in welded bimetallic structures
 LEWIS-11573 B75-10006 08

KJELDAHL METHOD

- Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Rapid method for determining nitrogen in tantalum and niobium alloys
 LEWIS-12237 B74-10085 04

KLYSTRONS

- Traveling-wave photodetector has sub-nanosecond response
 GSFC-10831 B70-10641 02

Arc protection system for high-power RF amplifiers
 NPO-11560 B72-10099 02
 Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
 LEWIS-11610 B73-10206 03
 Transmitter switch for high-power microwave output
 NPO-13439 B75-10122 02

KNOBS

Unified hatch system
 MSC-15813 B71-10095 06
 High mobility work station restraint support
 MSC-12419 B71-10301 07

KNUDSEN FLOW

Computer program for analysis of flow across a gas turbine seal
 LEWIS-10975 B70-10317 09
 Trace contaminant adsorption and sorbent regeneration in closed ecological systems
 LANGLEY-10681 B72-10328 04

KOVAR (TRADEMARK)

An investigation of the strength of aluminum wire used in integrated circuits
 NPO-11219 B70-10275 01
 Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
 Low-temperature bonding of temperature-resistant electronic connections
 M-FS-20909 B71-10253 08
 Solar sensor with autocollimator
 ARC-10148 B72-10192 03

KRYPTON

Compact electric heater
 LEWIS-11172 B70-10677 03
 Simple gas chromatographic system for analysis of microbial respiratory gases
 ARC-10403 B72-10207 03

KRYPTON 85

Gas leak-detection system
 NPO-11405 B72-10087 03

KUTTA-JOUKOWSKI CONDITION

Method of calculating blade-to-blade plane flow in centrifugal pump
 M-FS-18087 B70-10124 06

L**LABORATORIES**

Instruction manuals for radiographic nondestructive testing
 M-FS-21350 B71-10156 06
 Recommended safety guides for industrial laboratories and shops
 SAN-10050 B71-10175 07
 Real-time pair-feeding of animals
 ARC-10302 B72-10298 05

LABORATORY EQUIPMENT

Quantitative conversion of water to carbon dioxide
 NPO-10731 B70-10013 04
 Mass spectrometer detects high molecular weight components
 HQ-10477 B70-10057 01
 Thin film devices used as oxygen partial pressure sensors
 XLA-06473 B70-10419 04
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05

Preparation of thin polymer films for infrared reaction rate studies
 MSC-15893 B70-10551 04

Strain gage installation manual
 M-FS-18822 B70-10715 06
 Hydraulically operated tilt table
 M-FS-21047 B71-10024 05
 Laboratory leak tester provides high sensitivity
 AEC-10042 B72-10240 03

Rapid evaluation of reverse-osmosis membranes
 ARC-10659 B72-10413 04
 A magnetic mouse activity meter
 HQ-10664 B72-10482 05

Automatic agar tray inoculation device
 LANGLEY-11074 B72-10637 05
 Automated single-slide staining system
 LANGLEY-11649 B74-10188 05

Liquid sample processor
 NPO-13136 B74-10278 05
 Developments in spectrophotometry I: An instrument for high-resolution measurements of optical intensity and polarization
 NPO-13604 B75-10332 03

LACQUERS

Inexpensive, removable coating for plaster tooling
 MSC-15819 B70-10666 04

LACTATES

Stabilization of lactate dehydrogenase
 ARC-10415 B72-10062 05

LADDERS

Standards for material handling and facilities equipment proofload testing
 MSC-15788 B70-10526 07
 Cylindrically shaped rope ladder
 M-FS-16319 B72-10688 07

LAGRANGE COORDINATES

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
 NPO-11800 B71-10532 09

LAGRANGE MULTIPLIERS

COPTRAN - A method of optimum communication systems design
 ERC-10273 B70-10501 09
 Optimum Multi-Impulse Rendezvous Program
 MSC-13139 B70-10623 06
 Separation of two bodies in space
 NPO-10663 B70-10625 09

LAKES

Effect of thermal discharges on the mass energy balance of Lake Michigan
 AEC-10013 B72-10004 03
 Hydraulic modeling of heat dispersion in large lakes
 AEC-10003 B72-10039 03

LAMB WAVES

Enhanced Lamb dip for absolute laser frequency stabilization
 HQ-10695 B72-10481 02

LAMINAR BOUNDARY LAYER

Computer program for calculating aerodynamic forces on blade sections
 LEWIS-11382 B71-10153 09
 Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
 LEWIS-11097 B72-10111 09
 Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
 LEWIS-12178 B74-10129 09

LAMINAR FLOW

Prediction of gas leakage of environmental control systems
 HQ-10270 B70-10201 05

Biological handbook for engineers
 M-FS-20349 B70-10255 05
 Computer program for analysis of flow across a gas turbine seal
 LEWIS-10975 B70-10317 09

Hydraulic characteristics of flow through miniature slits
 NPO-11354 B70-10400 07

Economic method for measuring ultra-low flow rates of fluids
 NPO-12064 B70-10531 04

Prediction of windage power loss in alternators
 LEWIS-10939 B71-10074 06

Computing incompressible laminar and turbulent boundary layer formation
 LEWIS-11190 B71-10155 09

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
 LEWIS-10788 B71-10392 09

Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
 LEWIS-11636 B72-10070 09

Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
 LEWIS-11097 B72-10111 09

Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
 LEWIS-11652 B72-10742 04

Reduction of noise in gyro outputs
 NPO-11603 B72-10743 06

Pressure drop and pumping power for fluid flow through round tubes
 M-FS-24172 B73-10186 09

LAMINAR HEAT TRANSFER

Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
 NPO-11725 B72-10707 03

LAMINATES

Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01

Use of acrylic sheet molds for elastomeric products
 MSC-15636 B70-10019 08

A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01

Development of lightweight cryogenic tank supports
 M-FS-20726 B70-10291 07

Low heat-gain cryogenic-liquid transfer system
 MSC-15165 B70-10306 07

Contact material for pressure-sintering ferrites
 ERC-10213 B70-10380 01

Nondestructive sonic testing of adhesive-bonded composites
 M-FS-20793 B70-10397 08

New hyperthermal thermosetting heterocyclic polymers
 LANGLEY-10221 B70-10403 04

Flame-resistant thin panels of glass fabric-polyimide resin laminates
 MSC-15562 B70-10490 04

Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05

Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04

Promising born/graphite/resin composites
M-FS-21126 B71-10217 04

Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02

Liquid-hydrogen/nuclear-radiation resistant seals
M-FS-21364 B71-10340 03

Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07

New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04

Convolved fabric for full-pressure gloves
ARC-10529 B72-10215 04

Nondestructive testing for braze voids in thin panels by use of special coatings
LANGLEY-10486 B72-10374 08

Built-in bleeder system in laminated plastic structures
MSC-17713 B72-10562 08

An inexpensive and effective method for calculating the strength of randomly reinforced fiber composites
LEWIS-11985 B73-10039 04

Residual stress effects on the impact resistance and strength of fiber composites
LEWIS-11984 B73-10063 04

Metal-metal reinforced laminar composites
LEWIS-11790 B73-10068 04

Holographic nondestructive testing of laminates
JSC-19107 B73-10108 04

A new concept for joining dissimilar composites
M-FS-24307 B73-10148 04

Graphite/polyimide laminates with near-zero thermal expansion
JSC-17662 B73-10254 04

Boron-epoxy tubular structure members
ARC-10737 B73-10265 08

Preparing thermoplastic aromatic polyimides
LANGLEY-11372 B73-10319 04

Transparent polymeric laminates
ARC-10783 B73-10341 04

Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08

Lightweight inflatable material with low permeability
LANGLEY-10928 B73-10400 04

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09

Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06

Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04

Isometric scan method for ultrasonic evaluation of composite panels
LEWIS-12437 B75-10014 01

Fabrication and repair of graphite/epoxy laminates
M-FS-23228 B75-10164 08

Lightweight ducts fabricated from reinforced plastics and elastomers
MSC-19482 B75-10173 06

LANDING
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09

LANDING AIDS
Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02

Traffic control system and method
GSFC-10087 B74-10024 02

Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06

LANDING GEAR
A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06

Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06

Low-profile landing-gear assembly
ARC-10786 B75-10055 06

LANDING INSTRUMENTS
Dry-frictional shock absorber
NPO-11212 B70-10040 07

LANDING MODULES
Microbial burden prediction model program
NPO-11709 B71-10401 09

Optimized braking of landing vehicles with atmospheric drag
NPO-11402 B72-10084 06

LANDSAT SATELLITES
Computer program for spacecraft-boosters separation spring selection, set composition, and location determination
GSFC-11616 B74-10037 09

LANDSAT 1
Vertical copy camera system provides photographs from ERTS-1 imagery
LEWIS-12140 B74-10009 07

LANGUAGE PROGRAMMING
Computer program for discounted cash flow/rate of return evaluations
M-FS-19040 B71-10377 09

Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09

Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G
MSC-11653 B72-10721 09

LANGUAGES
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09

LANTHANUM FLUORIDES
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04

LANTHANUM OXIDES
Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 B70-10432 04

LAP JOINTS
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08

Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08

New explosive seam welding concepts
LANGLEY-11211 B73-10180 04

LAPLACE TRANSFORMATION
Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09

Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09

Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03

Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09

Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06

LARGE SCALE INTEGRATION
Array multiplier
ERC-90076 B70-10047 02

Digital-voltage curve generator
NPO-11104 B70-10590 02

Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09

Data sampling system for monitor and control station
M-FS-20948 B71-10299 02

Topological solution of bilateral switching networks
ARC-10294 B72-10055 01

Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01

Packaging concept for LSI beam lead integrated circuits
M-FS-21374 B72-10329 07

Memory reduction through higher level language hardware
M-FS-21128 B72-10350 09

An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08

Data processor with conditionally supplied clock signals
GSFC-10975 B74-10021 02

Interactive graphical computer-aided design system
M-FS-23157 B75-10096 01

LASER MODES
Dually-mode-locked ND: YAG laser
GSFC-11746 B74-10038 03

LASER OUTPUTS
Laser wavelength selector and output coupler
ERC-10248 B70-10507 02

Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07

Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03

Transmission of optical frequencies with minimal losses
HQ-10541 B72-10389 03

Laser beam deflection control: A concept
MSC-13814 B72-10411 02

Alignment microscope for rotating laser scanner
MSC-14118 B72-10435 03

- Efficient wire-grid duplexer-polarized for CO₂ lasers
 GSFC-11403 B72-10440 03
 Particle detection with intensified laser beam
 HQ-10645 B72-10516 03
 Measurement of electron density and temperature in plasmas
 ARC-10598 B72-10563 03
 Laser mass spectrometer
 ARC-10687 B72-10571 03
 Oscillation of laser-beam intensity as observed with beam splitters
 ARC-10694 B72-10572 03
 A bi-stable optical device
 HQ-10701 B72-10655 03
 Optimal read/write memory system components
 M-FS-22044 B72-10697 01
 Q-switched, cavity-dumped, mode-locked laser
 GSFC-11509 B73-10175 03
 A laser head for simultaneous optical pumping of several dye lasers
 LANGLEY-11341 B73-10336 03
 Recorder/processor apparatus
 GSFC-11553 B74-10042 03
 Wavelength-selective, sequential Q-switching laser cavity
 LANGLEY-11045 B74-10134 03
 Acoustically controlled integrated laser for communications systems
 NPO-13175 B75-10047 03
 Laser using lead chloride vapor
 NPO-13615 B75-10128 03
 Optical-noise suppression unit: A concept
 MSC-12640 B75-10315 03
- LASER RANGER/TRACKER**
 High-accuracy detector for laser radar
 MSC-13275 B70-10570 01
- LASERS**
 Holographic stress analysis
 M-FS-20687 B70-10123 01
 Laser-Doppler gas velocimeter
 M-FS-20583 B70-10143 02
 Diffusion filter eliminates fringe effects of coherent laser light source
 NPO-10417 B70-10226 03
 Optically activated magnetic recording tape
 GSFC-10275 B70-10247 01
 A proposed laser measurement system for determining surface contour
 HQ-10326 B70-10263 02
 The effect of object motion in Fraunhofer holography with application to velocity measurements
 MSC-12295 B70-10268 03
 Finite fringe hologram
 HQ-10347 B70-10271 03
 Stellar spectrum classifier
 MSC-13450 B70-10319 03
 Picosecond pulse measurement by two-photon excitation of photographic film
 ERC-10227 B70-10377 02
 Directional coupler for optical waveguides
 ERC-10094 B70-10381 03
 Multipass holographic interferometer improves image resolution
 HQ-10499 B70-10426 03
 Laser scribing of silicon wafers
 ERC-10386 B70-10437 01
- Laser method for finding axis of rotation
 ARC-10388 B70-10439 03
 Spectral analysis of oscillation instabilities in frequency standards
 M-FS-20778 B70-10572 02
 Flexible pivot mount eliminates friction and hysteresis
 M-FS-20725 B70-10577 07
 Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Optical probing of supersonic aerodynamic turbulence
 M-FS-20686 B70-10665 03
 Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
 M-FS-20476 B71-10016 01
 Thin spray film thickness measuring technique
 M-FS-20842 B71-10062 08
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03
 Vibration detection using lasers
 ARC-10389 B71-10145 03
 Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 B71-10232 03
 Optical probing of supersonic flows with statistical correlation
 M-FS-20642 B71-10252 03
 Variable ratio beam splitter for laser applications
 ARC-10391 B71-10265 03
 Vibration analysis by time-average holography
 LANGLEY-10614 B71-10333 03
 Remote control radioactive-waste removal system uses modulated laser transmitter
 LANGLEY-10311 B71-10343 03
 Vibration testing and analysis using holography
 M-FS-21050 B71-10352 03
 Laser net - A concept for monitoring wingtip vortices on runways
 M-FS-20857 B71-10360 02
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Experimental study of surface cracks
 MSC-14032 B72-10019 04
 Sensitive holographic detection of small aerodynamic perturbations
 ARC-10422 B72-10209 03
 Hybrid holographic system
 M-FS-20074 B72-10260 03
 Laser frequency modulation with electron plasma
 AEC-10079 B72-10373 03
 Laser beam deflection control: A concept
 MSC-13814 B72-10411 02
 Acousto-optic filter for electronic laser tuning
 HQ-10715 B72-10520 03
- An absorption spectrum amplifier for determining gas composition
 HQ-10752 B72-10524 03
 Film handling system for laser scanner/recorder
 MSC-14121 B72-10539 07
 Detection of nitric oxide pollution
 ARC-10709 B73-10018 03
 Holographic testing with a double reference beam
 JSC-17959 B73-10086 03
 Laser system detects tower deflections
 LEWIS-11870 B73-10243 02
 Laser velocimeter with transverse and on-axis sensitivity
 ARC-10642 B73-10262 03
 Laser velocimeter for simultaneous two-dimensional velocity measurements
 ARC-10637 B73-10267 02
 Laser scanner for testing semiconductor chips
 M-FS-22693 B73-10327 02
 Hologram recording tubes
 M-FS-22590 B73-10330 03
 Laser energy converted into electric power
 NPO-13308 B73-10353 02
 Three-dimensional gas turbulence measurement with a laser-Doppler velocimeter system
 M-FS-22713 B73-10371 04
 Image formation in microwave holography
 ARC-10773 B73-10378 03
 Coherence-length extender
 M-FS-22434 B73-10399 03
 Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
 M-FS-22741 B73-10417 03
 Laser-actuated holographic storage device
 M-FS-22768 B73-10423 03
 Binary-selectable detector holdoff circuit
 M-FS-22898 B73-10487 02
 Surface roughness measured by optical signatures
 ARC-10853 B74-10118 03
 Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
 HQ-10844 B75-10087 03
 Laser scanned image sensors using photoconductors with deep traps
 NPO-13131 B75-10112 03
 High-energy lasers by using distributed reflection: A concept
 NPO-13346 B75-10118 03
 Laser-to-electricity energy converter for short wavelengths
 NPO-13390 B75-10119 03
 Double-discharge copper-vapor laser
 NPO-13348 B75-10123 03
 Laser action generated within a light pipe: A concept
 NPO-13531 B75-10127 03
 Laser velocimeter measurements of high-speed compressible flows
 ARC-10781 B75-10141 03
 Diffused guides for distributed-feedback lasers
 NPO-13544 B75-10206 03
 Signal mixer for optical heterodyne receiver
 M-FS-23251 B75-10307 03

LATCHES

High-powered automatic latching device
 MSC-15474 B70-10198 07
 Unified hatch system
 MSC-15813 B71-10095 06
 Efficient digital comparison technique for logic circuits
 M-FS-21080 B71-10218 02
 Latch mechanism
 M-FS-21606 B72-10457 08

LATERAL CONTROL

Prevention of damage to delicate connectors during mounting of heavy engines for testing
 NUC-10322 B71-10044 06
 A cable stabilizer for outdoor elevators
 KSC-10513 B72-10283 07

LATERAL STABILITY

In vivo measurement of mechanical impedance of bone
 ARC-10857 B74-10245 05

LATEX

Nonflammable organic-base paint for oxygen-rich atmospheres
 M-FS-20486 B71-10077 04
 Covalent bonding of antibodies of polystyrene latex beads: A concept
 MSC-13906 B72-10006 05

LATHES

Electro-chemical grinding
 LANGLEY-10801 B72-10744 08

LATITUDE

Orbit, reentry, and landing attachment for globes
 LANGLEY-10626 B70-10656 03

LATTICE VIBRATIONS

Spark ultrasonic transducer
 M-FS-21233 B72-10594 04

LATTICES

Quasi-optical equivalent of waveguide slide screw tuner
 ERC-10312 B70-10384 01

LAUNCH VEHICLES

Diagnostic capability added to digital events evaluator
 KSC-10526 B71-10001 02
 Quick response targeting program
 M-FS-15157 B71-10147 09
 Rapid analysis of electric propulsion missions
 ARC-10430 B72-10299 09
 Separation dynamics of S-II derivative launch vehicle
 M-FS-24325 B74-10151 06

LAYERS

Improved heat-resistant garments
 MSC-12109 B70-10544 08
 Nondestructive-test standards for evaluation of fiber-reinforced composites
 M-FS-21288 B72-10157 04
 Position sensing materials wound on a reel
 GSFC-11902 B75-10249 07

LAYOUTS

Cartesian-coordinate dimensioning for plumbing systems
 M-FS-18867 B71-10435 08

LC CIRCUITS

Active resistance capacitance filter design
 ARC-10020 B70-10034 01
 A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01
 Isolated transfer of analog signals
 LANGLEY-11312 B73-10513 02

Temperature-stable Gunn-diode oscillator
 M-FS-23242 B75-10306 01

LEACHING

Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
 MSC-13571 B70-10540 04
 Improved fire-resistant coatings
 GSFC-10072 B71-10198 04
 Leaching of nitroso rubber material removes uncured polymer
 MSC-17185 B72-10449 04

LEAD (METAL)

Improved alkaline electrochemical cell
 GSFC-10792 B70-10153 01
 Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
 Environmental effects on silicon solar cells
 NPO-11475 B71-10282 02
 Fixture for multiple-FCC chemical stripping and plating
 M-FS-20237 B71-10420 08
 Explosive cord
 M-FS-21928 B72-10293 08
 Flexible shielding system for radiation protection
 LRL-10028 B72-10500 03
 Lead-oxygen closed-loop battery system
 M-FS-23059 B74-10267 06

LEAD ACETATES

Suppression of zinc dendrites in zinc electrode power cells
 HQ-10550 B70-10434 02

LEAD ALLOYS

A simple, efficient resistance soldering apparatus
 GSFC-10913 B72-10649 08

LEAD CHLORIDES

Laser using lead chloride vapor
 NPO-13615 B75-10128 03

LEAD COMPOUNDS

Improved alkaline electrochemical cell
 GSFC-10792 B70-10153 01

LEAD OXIDES

Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01

LEAD TELLURIDES

Thermally cascaded thermoelectric generator
 NPO-10753 B70-10280 03

LEAD TITANATES

Bimorph piezoelectric device functions as flapper valve
 ERC-10082 B70-10382 01
 Subminiature transducer measures unsteady pressures
 ARC-10349 B71-10114 01
 A sonic transducer to detect fluid leaks
 KSC-10704 B72-10376 01

LEADING EDGES

New design of hingeless helicopter rotor improves stability
 ARC-10807 B75-10132 06

LEAKAGE

Gas flowmeter
 M-FS-20663 B70-10050 07
 Vibration damping of mechanical seals
 M-FS-14160 B70-10068 07
 Investigation of positive shaft seals
 M-FS-18589 B70-10176 07

Prediction of gas leakage of environmental control systems
 HQ-10270 B70-10201 05
 Volumetric leak detector
 MSC-11325 B70-10302 07
 Computer program for analysis of flow across a gas turbine seal
 LEWIS-10975 B70-10317 09
 X-connectors for tubing - Feasibility study
 M-FS-20827 B70-10418 07
 Vacuum leak detector features higher sensitivity
 ERC-10034 B70-10493 03
 Volume-checking tool
 KSC-10514 B70-10502 07
 Circuit minimizes current drain caused by neon indicator lamps
 NUC-10157 B70-10534 01
 Improved burst disk/cutter assembly
 KSC-10516 B70-10583 07
 Low leak rate poppet-and-seat check valve
 MSC-13587 B70-10688 07
 Welded polypropylene liners for large descaling tanks
 M-FS-18711 B71-10012 07
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
 Submersed sensing electrode used in fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01
 Determination of gas volume trapped in a closed fluid system
 MSC-15685 B71-10094 06
 High-temperature, long-life polyimide seals for hydraulic actuator rods
 LEWIS-11212 B71-10098 07
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 System accurately controls pressure in cryogenic tanks
 LEWIS-11329 B71-10118 03
 Scintillation detector for carbon-14
 ARC-10378 B71-10144 03
 Sensitive gaseous hydrogen detection system
 M-FS-21161 B71-10209 04
 Reduction of valve leakage - A concept
 NPO-12003 B71-10315 07
 Nonvolatile read/write memory element - A concept
 GSFC-10994 B71-10347 01
 Cadmium plated steel caps seal anodized aluminum fittings
 M-FS-20137 B71-10355 05
 Voltage regulator dissipates minimal power and functions as a voltage divider
 B71-10367 01
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01
 Zero-leakage valves
 ARC-10506 B72-10024 06
 Gas leak-detection system
 NPO-11405 B72-10087 03
 High speed, self-acting, face-contact shaft seal has low leakage and very low wear
 LEWIS-11598 B72-10114 07
 Micro regulating ball valve
 ARC-10295 B72-10121 06
 Laboratory leak tester provides high sensitivity
 AEC-10042 B72-10240 03

Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
 M-FS-21924 B72-10316 01
 Helium leak measurements using CO₂ as a carrier
 M-FS-21742 B72-10354 03
 A sonic transducer to detect fluid leaks
 KSC-10704 B72-10376 01
 Expandable coating cocoon leak detection system
 M-FS-21848 B72-10380 06
 Leak test system
 M-FS-21788 B72-10576 06
 SRC seal testing
 M-FS-22426 B73-10199 01
 Improved circumferential shaft seal
 LEWIS-11873 B74-10062 07
 Electrometer system measures nanoamps at high voltage
 LEWIS-12267 B74-10064 01
 Design criteria monograph on transmission seals
 LEWIS-12403 B75-10011 07

LEARNING
 FORTRAN programming - A self-taught course
 LANGLEY-10738 B71-10052 09
 Qualifications and certification of nondestructive testing personnel
 M-FS-20850 B71-10271 06

LEAST SQUARES METHOD
 Polynomial-smoothing and derivative-estimating formulas for functions of one or two independent variables
 NPO-11256 B70-10078 09
 A method for rapidly evaluating the linearity of calibration data
 M-FS-14834 B70-10085 03
 Use of thermodynamic properties of metal-gas systems as low-pressure standards
 LANGLEY-10452 B70-10223 03
 Data from various sources provide standard single-level resonance parameters for uranium 233
 NUC-10229 B70-10357 03
 Neutron ages computed from experimental activation data
 LEWIS-10949 B70-10557 09
 Single-level resonance parameters fit nuclear cross-sections
 NUC-10101 B70-10686 03
 ELAS8 - Computer program for linear structure equilibrium problems
 NPO-11555 B71-10185 09
 Analysis of low resolution mass spectra
 GSFC-11279 B71-10267 09
 Statistical analysis tables for truncated or censored samples
 M-FS-21024 B71-10351 03
 Elements of orbit-determination theory - Textbook
 NPO-11466 B71-10425 03
 Computer program for fitting low-order polynomial splines by method of least squares
 LEWIS-11651 B72-10585 09
 Method for nonlinear exponential regression analysis
 M-FS-21965 B72-10622 09

LEATHER
 Potentiometer, constant tension and lubrication device
 KSC-10723 B72-10541 02

LEG (ANATOMY)

Biomedical recording system
 MSC-13653 B70-10697 05
 Lightweight orthotic braces
 LANGLEY-11894 B75-10303 05

LEGENDRE FUNCTIONS

Use of multivariable asymptotic expansions in a satellite theory
 NPO-11750 B73-10303 09

LENGTH

Multihead measuring tape
 LANGLEY-11266 B73-10193 07
 Instrument for measuring thin-film belt lengths
 NPO-13149 B73-10455 06

LENS ANTENNAS

Radial rotating antenna-feed system
 GSFC-11013 B71-10025 01

LENS DESIGN

Improved optical lens system
 NPO-11311 B70-10354 03
 Refracting lens system for low-scatter star-tracker: A Concept
 MSC-14724 B75-10043 03
 Optical design computer program: LENS II
 GSFC-11951 B75-10250 03
 Contact-eutectic-lens fabrication technique
 M-FS-23275 B75-10308 04

LENSES

Noncontacting-optical-strain device
 NPO-10778 B70-10292 03
 Stellar spectrum classifier
 MSC-13450 B70-10319 03
 Automatic optometer operates with infrared test pattern
 ARC-10095 B70-10401 05
 Laser method for finding axis of rotation
 ARC-10388 B70-10439 03
 Color television system using single gun color cathode ray tube
 ERC-10098 B70-10464 02
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 B70-10568 05
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Kaleidoscopic light feedback for television systems
 MSC-12386 B71-10068 03
 Radiant energy absorption enhancement in optical imaging systems
 ARC-10194 B71-10112 03
 Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03
 Vibration detection using lasers
 ARC-10389 B71-10145 03
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Noise diffraction patterns eliminated in coherent optical systems
 GSFC-11133 B71-10236 03
 Multispectral infrared imaging interferometer
 MSC-12404 B71-10325 02
 Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
 A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
 M-FS-20546 B71-10439 02
 Modified camera records lens settings on film
 MSC-12363 B71-10494 03

Scale factor gage for fiber optics inspection device
 MSC-17361 B71-10496 07
 Measuring internal dimensions of small transparent objects
 LANGLEY-10712 B71-10505 08
 Shutter design for stereoscopic camera
 MSC-13613 B71-10506 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Optical alignment of electrodes on electrical discharge machines
 XAC-09489 B72-10036 07
 Nematic liquid crystals for optical shutters: A concept
 NPO-11367 B72-10083 03
 Glass technology involved in the manufacture of magnetometer components
 GSFC-11283 B72-10132 03
 Conical electromagnetic radiation flux concentrator
 M-FS-21613 B72-10147 03
 Solar sensor with autocollimator
 ARC-10148 B72-10192 03
 Visual sensitivity tester
 ARC-10329 B72-10203 05
 Acoustic-optic deflector telescope
 M-FS-23107 B74-10293 03
 Refracting lens system for low-scatter star-tracker: A Concept
 MSC-14724 B75-10043 03
 General optics evaluation program (GENOPTICS)
 GSFC-12038 B75-10294 09

LEVEL (HORIZONTAL)
 Modified bubble level senses pitch and roll angles over wide range
 MSC-13506 B71-10085 03
 Two-axis leveling detector system
 M-FS-21344 B72-10392 02
 Self-leveling load table
 M-FS-22039 B74-10144 06

LEVELING
 Two-axis leveling detector system
 M-FS-21344 B72-10392 02

LEVERS
 Disc pack cleaning table saves computer time
 LANGLEY-10590 B70-10532 09
 Absolute focus lock for microscopes
 LANGLEY-10184 B70-10728 07
 Unified hatch system
 MSC-15813 B71-10095 06
 Bileaf mechanical strain gage
 ARC-10303 B72-10197 07

LEVITATION
 Development of superconductive magnets
 LEWIS-11170 B70-10678 03
 Levitation of objects using acoustic energy
 M-FS-23261 B75-10232 03

LIAPUNOV FUNCTIONS
 The determination of stability domains for nonlinear dynamical systems
 M-FS-14832 B70-10539 03
 Algorithm for Liapunov stability analysis
 ARC-10498 B72-10023 09

LIBRARIES
 Subroutines for evaluating single and multiple integrals using modified Romberg method
 NPO-11718 B71-10138 09
 Analysis of low resolution mass spectra
 GSFC-11279 B71-10267 09

- Automatic computer subprogram
selection from application-program libraries
- ALTLIB
LANGLEY-11124 B72-10607 09
Three bit mass spectral search program
NPO-11960 B72-10747 09
Computer system for library access
GSFC-11952 B75-10292 09
- LIFE (DURABILITY)**
Holographic stress analysis
M-FS-20687 B70-10123 01
Electronically controlled motor drive
system has ultra-high reliability and long
lifetime
GSFC-10065 B70-10346 02
Suppression of zinc dendrites in zinc
electrode power cells
HQ-10550 B70-10434 02
Electrodeposited inorganic separators for
alkaline batteries
GSFC-10943 B70-10462 01
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Simple technique extends life of
angular-contact ball bearings
LEWIS-11117 B70-10535 07
Proceedings of the Symposium on
Long-Life Hardware for Space
M-FS-20638 B70-10649 03
Long life, low cost ball valve, with lifted
seals and cartridge type construction
MSC-13430 B70-10653 07
Long-life electromechanical sine-cosine
generator
LANGLEY-10503 B71-10029 01
Teardown analysis for detecting shelf-life
degradation
M-FS-24017 B71-10195 04
Limited life item management
M-FS-24020 B71-10196 06
Cast segment evaluation
M-FS-21354 B71-10363 08
Durability tester for FCC connectors
M-FS-20128 B71-10418 08
Development of non-sweet, flavored food
cubes
MSC-14002 B71-10521 05
Ceramic thermal protective coating
withstands hostile environment of rotating
turbine blades
LEWIS-12554 B75-10290 04
- LIFE DETECTORS**
Scintillation detector for carbon-14
ARC-10378 B71-10144 03
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Particle detection by a light-scattering
technique
ARC-10384 B72-10160 03
Simple gas chromatographic system for
analysis of microbial respiratory gases
ARC-10403 B72-10207 03
A reusable prepositioned ATP reaction
chamber
HQ-10660 B72-10525 05
Unified life detection system: A
concept
ARC-10769 B73-10377 05
- LIFE RAFTS**
Stable, inflatable life raft for high seas
rescue operations
MSC-12393 B71-10167 05
- LIFE SCIENCES**
A reusable prepositioned ATP reaction
chamber
HQ-10660 B72-10525 05
- LIFE SUPPORT SYSTEMS**
Improved apparatus for continuous
culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
Design method for adsorption beds
HQ-10269 B70-10294 04
Miniature fuel cells relieve gas pressure
in sealed batteries
XGS-11370 B71-10064 02
Communications system for zero-g
simulation tests in water
M-FS-21357 B71-10344 02
Metabolic balance analysis program
M-FS-21237 B71-10384 09
Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
Solid amine compounds as sorbents for
carbon dioxide: A concept
ARC-10571 B72-10421 04
Breathing-metabolic simulator
HQ-10766 B72-10657 05
Metabolic simulation chamber
HQ-10776 B72-10658 05
Automation of Bosch reaction for CO2
reduction
M-FS-21674 B72-10666 04
Artificial atmosphere control system
M-FS-22159 B73-10089 05
Chemical pretreatment for the distillation
of urine
JSC-14225 B73-10224 04
Solar-energy conversion system provides
electrical power and thermal control for
life-support systems
M-FS-21628 B73-10524 06
Programmed-pressure air supply for
positive-pressure breathing system
ARC-10845 B74-10075 05
Spacecraft oxygen recovery system
ARC-10868 B74-10220 05
- LIFT**
Calculation of incompressible fluid flow
through cambered blades
M-FS-20503 B70-10093 06
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
Computer program for calculating
aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
- LIFT AUGMENTATION**
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
- LIFT DEVICES**
Easy manual operation of overhead
garage doors - A concept
KSC-10555 B70-10543 07
Ejector nozzle with massive blowing
ARC-10621 B72-10693 06
- LIFT DRAG RATIO**
Prediction of stall characteristics of
straight wing aircraft
LANGLEY-11013 B71-10501 09
Integrated flight controller for light
aircraft
ARC-10456 B72-10213 06
- LIFT FANS**
Split stator vane row for fans and
compressors
ARC-10288 B71-10528 06
Reduction of fan noise: A concept
ARC-10312 B72-10040 06
Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08
Computation of aerodynamic interference
between lifting surfaces and lift- and
cruise-fans
ARC-10833 B74-10113 09
- LIFTING BODIES**
Prediction of unsteady aerodynamic
loadings caused by trailing-edge
control-surface motions in subsonic
compressible flow
LANGLEY-11175 B74-10091 06
- LIFTING REENTRY VEHICLES**
New procedure for design of self-adaptive
control systems
LANGLEY-10255 B70-10115 02
- LIFTING ROTORS**
Swashplate feedback control for tilt-rotor
aircraft
ARC-10854 B74-10174 06
- LIGHT (VISIBLE RADIATION)**
Noncontacting-optical-strain device
NPO-10778 B70-10292 03
Radiant heating concept efficient for
light-transmitting windows
M-FS-20630 B70-10324 03
Heat-rejection windows for telescopes
M-FS-20634 B70-10386 04
Improved linings for integrating spheres
MSC-12237 B70-10413 03
Visible light electroluminescent diodes of
indium-gallium phosphide
ERC-10303 B70-10474 01
Photochromism of dihydroquinolines
HQ-10574 B70-10574 04
Kaleidoscopic light feedback for
television systems
MSC-12386 B71-10068 03
Optical enhancement of photomultiplier
sensitivity
ARC-10213 B71-10113 03
Photosensitive plastic used to produce
three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
Optical design and analysis program
GSFC-11393 B71-10456 09
Interferometric rotation sensor
ARC-10278 B72-10274 03
Unsupported thin film beam splitter
GSFC-10525 B72-10471 02
A reusable prepositioned ATP reaction
chamber
HQ-10660 B72-10525 05
A bi-stable optical device
HQ-10701 B72-10655 03
Erasable holographic medium using
cis-trans isomerization
M-FS-22062 B72-10720 03
Portable light detection system for the
blind
M-FS-22403 B73-10099 05
Spectrometer
GSFC-11694 B74-10181 03
- LIGHT ADAPTATION**
Nematic liquid crystals for optical
shutters: A concept
NPO-11367 B72-10083 03
Color-coded area sensitivity maps of
photomultipliers
LANGLEY-10320 B74-10259 01
- LIGHT AIRCRAFT**
A study of NACA and NASA published
information of pertinence in the design of
light aircraft
LANGLEY-10778 B70-10725 06
Integrated flight controller for light
aircraft
ARC-10456 B72-10213 06
Pulse-width-modulated servo valve for
autopilot system
LANGLEY-11643 B74-10179 06

Gust alleviation system to improve ride comfort of light airplanes
 LANGLEY-11771 B75-10224 03

LIGHT AMPLIFIERS

A sensitive image intensifier which uses inert gas
 LRL-10024 B72-10312 03
 Infrared tunable laser: A concept
 ARC-10463 B75-10081 03

LIGHT BEAMS

Electron energy analyzer
 HQ-10373 B70-10138 02
 Picosecond pulse measurement by two-photon excitation of photographic film
 ERC-10227 B70-10377 02
 Multipass holographic interferometer improves image resolution
 HQ-10499 B70-10426 03
 Laser method for finding axis of rotation
 ARC-10388 B70-10439 03
 Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03
 Toroidal mirrors provide virtual walls for breaks in light pipes
 ARC-10031 B70-10632 03
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Less-expensive Rochon prisms
 M-FS-20554 B70-10681 03
 EKG isolator
 M-FS-21236 B71-10124 05
 Vibration detection using lasers
 ARC-10389 B71-10145 03
 Atmospheric pollution measurement by optical cross correlation methods - A concept
 M-FS-12078 B71-10224 02
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Pulse excitation of bolometer bridges
 ARC-10292 B72-10054 01
 Hybrid holographic system
 M-FS-20074 B72-10260 03
 Optical enhancement of sensitivity in laser Doppler velocity systems
 ARC-10653 B72-10310 03

LIGHT EMISSION

Temperature compensation of light-emitting diodes
 ARC-10467 B72-10218 01
 Chemical-ionization visible and ultraviolet gas lasers: A concept
 NPO-13289 B75-10115 03

LIGHT GAS GUNS

Collapsible pistons for light-gas guns
 JSC-13789 B73-10413 07

LIGHT MODULATION

Multispectral facsimile reproducer
 LANGLEY-10618 B70-10360 03
 Hybrid holographic system
 M-FS-20074 B72-10260 03
 Design and fabrication of an experimental image forming light modulator
 M-FS-22547 B73-10182 03
 Elastic light-scattering modulator: A concept
 M-FS-22724 B73-10422 03
 Improved nondispersive infrared analyzer
 ARC-10802 B74-10243 03

Optical communication channel simulator system
 GSFC-11877 B74-10258 01
 Wide-field birefringent elements
 MSC-12677 B75-10105 03

LIGHT SCATTERING

Improved linings for integrating spheres
 MSC-12237 B70-10413 03
 Vacuum leak detector features higher sensitivity
 ERC-10034 B70-10493 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Particle detection by a light-scattering technique
 ARC-10384 B72-10160 03
 Optical enhancement of sensitivity in laser Doppler velocity systems
 ARC-10653 B72-10310 03
 Optical monitoring system
 M-FS-21692 B73-10050 03
 Elastic light-scattering modulator: A concept
 M-FS-22724 B73-10422 03
 Refracting lens system for low-scatter star-tracker: A Concept
 MSC-14724 B75-10043 03
 Laser action generated within a light pipe: A concept
 NPO-13531 B75-10127 03
 Developments in spectrophotometry II: A multiple-frequency particle-size spectrometer
 NPO-13606 B75-10333 03
 Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
 NPO-13614 B75-10335 03

LIGHT SOURCES

Diffusion filter eliminates fringe effects of coherent laser light source
 NPO-10417 B70-10226 03
 The effect of object motion in Fraunhofer holography with application to velocity measurements
 MSC-12295 B70-10268 03
 Picosecond pulse measurement by two-photon excitation of photographic film
 ERC-10227 B70-10377 02
 Visible light electroluminescent diodes of indium-gallium phosphide
 ERC-10303 B70-10474 01
 Technique for experimental determination of radiation interchange factors in solar wavelengths
 MSC-13476 B71-10066 03
 Modified bubble level senses pitch and roll angles over wide range
 MSC-13506 B71-10085 03
 Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 B71-10264 03
 Particle detection by a light-scattering technique
 ARC-10384 B72-10160 03
 Solar sensor with autocollimator
 ARC-10148 B72-10192 03
 Projections of scan patterns on human retina
 ARC-10181 B72-10193 05
 A dual-beam actinic light source for photosynthesis research
 ARC-10351 B72-10205 05

An improved apochromatic wedge utilizing optical molecular contact bonding
 GSFC-11082 B72-10388 03
 Uniform high irradiance source
 LEWIS-12360 B75-10008 03

LIGHT TRANSMISSION

Radiant heating concept efficient for light-transmitting windows
 M-FS-20630 B70-10324 03
 Toroidal mirrors provide virtual walls for breaks in light pipes
 ARC-10031 B70-10632 03
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Dual-wavelength system monitors deposition of films - A concept
 M-FS-20675 B70-10658 03
 Modified bubble level senses pitch and roll angles over wide range
 MSC-13506 B71-10085 03
 Radiant energy absorption enhancement in optical imaging systems
 ARC-10194 B71-10112 03
 Optical enhancement of photomultiplier sensitivity
 ARC-10213 B71-10113 03
 Laser device provides accurate reference to true gravitational vertical
 ARC-10444 B71-10479 07
 Particle detection by a light-scattering technique
 ARC-10384 B72-10160 03
 Hybrid holographic system
 M-FS-20074 B72-10260 03
 Unsupported thin film beam splitter
 GSFC-10525 B72-10471 02
 Optical monitoring system
 M-FS-21692 B73-10050 03

LIGHTING EQUIPMENT

Pressurized lighting system
 KSC-10644 B73-10280 02
 Casting copper to tungsten for high-power arc lamp cathodes
 LEWIS-12169 B74-10011 04

LIGHTNING

High voltage lightning grounding device
 LEWIS-11282 B71-10136 01
 Lightning flash detection system
 ARC-10562 B72-10272 02
 Automatic lightning location system
 AEC-10077 B72-10372 02
 An automatic lightning detection and photographic system
 KSC-10728 B73-10043 02
 Measuring the electric field of a cloud
 KSC-10731 B73-10074 02
 Rocket borne instrument to measure electric fields inside electrified clouds
 KSC-10730 B73-10176 03
 Determining distance to lightning strokes from a single station
 KSC-10698 B73-10178 02
 A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
 LEWIS-12109 B75-10068 02
 Time-of-arrival lightning activity location system
 KSC-11006 B75-10297 02

LIMBS (ANATOMY)

Human performance measuring device
 LANGLEY-10679 B70-10619 05

LIMESTONE

Fluidized-bed combustion reduces atmospheric pollutants
 AEC-10085 B72-10431 04

LIMITER AMPLIFIERS

High-accuracy detector for laser radar
MSC-13275 B70-10570 01

LIMITER CIRCUITS

Two terminal current limiter
NPO-11350 B70-10232 01
Signal to noise measurement circuit
GSFC-11239 B72-10102 01
Gated compressor, distortionless signal limiter
NPO-11820 B73-10387 01
Self-healing fuse
LEWIS-11964 B74-10004 02

LIMITS (MATHEMATICS)

Method of statistical filtering
MSC-13493 B70-10427 06
Tracking antenna deformation program
GSFC-11191 B71-10017 09
Tolerance analysis program
MSC-17487 B71-10389 09

LINEAR ACCELERATORS

Linear accelerator: A concept
KSC-10618 B72-10636 06

LINEAR AMPLIFIERS

Precision full-wave rectifier
ARC-10101 B70-10161 02

LINEAR ARRAYS

Analysis and optimization of an omnidirectional direction-finding system
M-FS-14346 B70-10112 02
Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 B70-10457 02
Piezoelectric actuator uses sequentially-excited multiple elements: A concept
NPO-11527 B72-10096 01

LINEAR CIRCUITS

Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01

LINEAR EQUATIONS

Polynomial-smoothing and derivative-estimating formulas for functions of one or two independent variables
NPO-11256 B70-10078 09
Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06
New model performance index for engineering design of control systems
HQ-10520 B70-10293 06
Method of statistical filtering
MSC-13493 B70-10427 06
Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
An empirical relationship for the penetration of 1 to 3 MeV electrons
LEWIS-11495 B72-10144 04
A linear programming manual
HQ-10743 B72-10671 09

LINEAR FILTERS

Theory and application of Kalman filtering
M-FS-20491 B70-10309 06
Method of statistical filtering
MSC-13493 B70-10427 06
Improved photographic prints with a linear radial transmission filter
LANGLEY-11221 B73-10242 03
Data-matched filter
JSC-14264 B73-10449 02

LINEAR PREDICTION

Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
A study of accuracy in selected numerical-analysis integration techniques
MSC-14802 B75-10273 09

LINEAR PROGRAMMING

NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09
A linear programming manual
HQ-10743 B72-10671 09

LINEAR RECEIVERS

Automatic carrier acquisition system for phase-lock-loop receivers
NPO-11628 B73-10343 02

LINEAR SYSTEMS

Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01
On-line analysis of random vibrations
ARC-10154 B71-10284 09
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01
Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09

LINEARITY

A method for rapidly evaluating the linearity of calibration data
M-FS-14834 B70-10085 03
New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
Television camera as a scientific instrument
NPO-11164 B70-10209 03
Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 B70-10298 01
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02
Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
Wide deviation phase modulator
LANGLEY-11607 B74-10178 02

LINEAR PROCESSES

Improved linings for integrating spheres
MSC-12237 B70-10413 03
Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08

LININGS

New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08
Welded polypropylene liners for large descaling tanks
M-FS-18711 B71-10012 07
Pressurized suits can be fabricated with adjustable dimensions
MSC-12398 B71-10092 05
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
Cast segment evaluation
M-FS-21354 B71-10363 08
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

LINKAGES

Unified hatch system
MSC-15813 B71-10095 06
Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08
Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01
Eye point-of-regard system
ARC-10360 B71-10476 05
Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06

LINKS (MATHEMATICS)

COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09

LIPIDS

The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05

LIQUEFIED GASES

Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 B70-10333 04
Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07
Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04
A reliable liquid helium detector
LEWIS-11487 B72-10145 01
Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
ARC-10560 B72-10278 03
Combination pressure regulator and safety valve: A Concept
MSC-14088 B72-10446 06
High pressure liquid gas pump
MSC-14087 B72-10590 06

- Freon 21 bearing lubrication and coolant system
HQ-10302 B72-10651 06
- LIQUEFIED NATURAL GAS**
Risk management technique for liquefied natural gas facilities
KSC-11005 B75-10193 04
- LIQUID AIR**
Frost as an insulator
NUC-11039 B70-10593 03
- LIQUID COOLING**
Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07
Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05
A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
Fill and vent quick disconnect
M-FS-21822 B72-10645 07
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
- LIQUID CRYSTALS**
Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06
Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03
Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06
A stable liquid crystal for electro-optical displays
HQ-10714 B72-10746 04
- LIQUID FLOW**
High pressure flow-rate switch
NPO-10722 B70-10028 07
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05
Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
Liquid level sensor
M-FS-16648 B70-10219 01
Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Positive fast sealing union connections
LEWIS-11290 B72-10133 06
An electrohydrodynamic heat pipe
ARC-10601 B72-10251 03
A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04
Computer program for the prediction of reorientation flow dynamics
LEWIS-11816 B73-10307 09
Shutoff and throttling valve
NPO-11951 B74-10105 07
- LIQUID HELIUM**
Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03
- Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease
ERC-90066 B70-10376 01
Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
A reliable liquid helium detector
LEWIS-11487 B72-10145 01
Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03
Design curve for liquid helium storage vessels
LEWIS-11498 B72-10286 02
Multipurpose top for liquid helium Dewar
ARC-10533 B72-10302 03
Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 B72-10318 04
Heat-operated cryogenic electrical generator
NPO-13303 B75-10116 03
High-energy lasers by using distributed reflection: A concept
NPO-13346 B75-10118 03
Fabrication of porous plugs for control of liquid helium
M-FS-23218 B75-10163 04
A two-degree Kelvin refrigerator
NPO-13459 B75-10181 03
Computer program for calculating thermodynamic and transport properties of fluids
LEWIS-12520 B75-10188 09
- LIQUID HYDROGEN**
Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03
Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
Large-capacity pump vaporizer for liquid hydrogen and nitrogen
M-FS-20508 B70-10368 07
Evaluation of two designs for cryogenic insulation
M-FS-14740 B70-10415 03
Strain compatibility tests for sprayed foam cryogenic insulation
M-FS-16063 B70-10423 04
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
The water-cryogen heat exchanger
NUC-11029 B70-10591 03
The low-cost cryostat
NUC-11034 B70-10592 03
Frost as an insulator
NUC-11039 B70-10593 03
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
- Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
Low temperature uses of helium
LEWIS-11171 B70-10673 03
Low temperature fluid blender
LEWIS-11206 B71-10058 04
Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
Thermal conductivity of gaseous and liquid hydrogen
NUC-10558 B71-10105 04
Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03
Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
Main tank injection pressurization program
LEWIS-11368 B72-10069 09
Small turbing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
Turbopump thermodynamic cooling
M-FS-21597 B72-10408 06
Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02
Fluid insulation to prevent ice formation in heat exchangers
LEWIS-11959 B73-10028 06
- LIQUID INJECTION**
Injector has no backsplash
NPO-13208 B73-10461 07
- LIQUID LASERS**
Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
Laser wavelength selector and output coupler
ERC-10248 B70-10507 02
- LIQUID LEVELS**
Liquid level sensor
M-FS-16648 B70-10219 01
Two-axis leveling detector system
M-FS-21344 B72-10392 02
- LIQUID METAL COOLED REACTORS**
Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept
NPO-10755 B70-10090 07
- LIQUID METALS**
Improved electron-beam welding technique
M-FS-20714 B70-10127 08
Vapor feeding of liquid metal cathodes
HQ-10213 B70-10168 03
Investigation of positive shaft seals
M-FS-18589 B70-10176 07
Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
Variables in turbine erosion
M-FS-18677 B70-10325 03
A liquid radiation detector with high spatial resolution
MSC-13965 B72-10034 03
Composite casting demonstration
M-FS-21668 B72-10266 04
Gettering capsule for removing oxygen from liquid lithium systems
LEWIS-11509 B73-10002 04

- Liquid metal porous matrix sliding electrical contact: A concept
LEWIS-11735 B73-10164 01
- Separation of gas from liquid in a two-phase flow system
NPO-11556 B73-10383 03
- LIQUID NITROGEN**
- Quantitative conversion of water to carbon dioxide
NPO-10731 B70-10013 04
- Ultra-high molecular sink vacuum chamber
NPO-10799 B70-10130 03
- Polymerization of perfluorobutadiene
NPO-10863 B70-10131 04
- Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 B70-10334 04
- Large-capacity pump vaporizer for liquid hydrogen and nitrogen
M-FS-20508 B70-10368 07
- Coplanar interconnection module
ERC-10237 B70-10378 01
- Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08
- Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
- The water-cryogen heat exchanger
NUC-11029 B70-10591 03
- The low-cost cryostat
NUC-11034 B70-10592 03
- Frost as an insulator
NUC-11039 B70-10593 03
- Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04
- Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
- Low temperature uses of helium
LEWIS-11171 B70-10673 03
- Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
- Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
- Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
- Longitudinal friction forces in piping design
M-FS-13754 B72-10103 01
- Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
- Preventing oil migration in vacuum systems
GSFC-11253 B72-10129 04
- Comparison of catalyst activity
ARC-10493 B72-10201 04
- Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
- Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
- A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
- Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
M-FS-21113 B72-10321 04
- Helium leak measurements using CO₂ as a carrier
M-FS-21742 B72-10354 03
- Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
- Right angle mounted cold trap
GSFC-11323 B72-10436 06
- Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02
- Dry ice plug for hydraulic and pneumatic pipe flushing
MSC-12548 B72-10496 06
- Automatic device for shell freezing of liquids
GSFC-11737 B73-10253 04
- Computer program for calculating thermodynamic and transport properties of fluids
LEWIS-12520 B75-10188 09
- LIQUID OXYGEN**
- Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
- Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
- Pilot-booster control valve
M-FS-20635 B70-10558 07
- Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07
- The water-cryogen heat exchanger
NUC-11029 B70-10591 03
- Low temperature uses of helium
LEWIS-11171 B70-10673 03
- Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- Aircrew oxygen system
ARC-10247 B72-10195 05
- A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03
- Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure
M-FS-21930 B72-10476 06
- Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06
- Geysering inhibitor pipe
KSC-10615 B73-10110 07
- Handbook on thermophysical properties of oxygen
LEWIS-11962 B73-10187 04
- Liquid and gaseous oxygen safety review
LEWIS-12041 B73-10310 04
- LIQUID PHASES**
- Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04
- Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
- Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01
- LIQUID POTASSIUM**
- High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07
- LIQUID PROPELLANT ROCKET ENGINES**
- Spray momentum measuring system
MSC-12305 B71-10137 05
- A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
- Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06
- Main tank injection pressurization program
LEWIS-11368 B72-10069 09
- Combination throttle and shutoff valve
M-FS-21513 B72-10287 07
- Analysis and computer programs to calculate acoustic wave properties of baffled chambers
LEWIS-11529 B72-10577 09
- Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04
- Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08
- Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
M-FS-22678 B73-10518 06
- Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
- Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06
- Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
- Design criteria monograph for valve assemblies
LEWIS-12332 B74-10227 06
- Design criteria monograph on centrifugal flow turbopumps
LEWIS-12346 B74-10228 06
- Design criteria monograph on axial flow turbines
LEWIS-12376 B75-10009 06
- RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
LEWIS-12388 B75-10186 09
- LIQUID ROCKET PROPELLANTS**
- Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
- Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
- Fluidic pressure regulators
ARC-10474 B72-10162 06
- Propellant feed systems transients
MSC-17848 B72-10677 06
- Design criteria monograph for liquid propellant gas generators
LEWIS-12139 B74-10008 07
- Fluid dynamics test method
NPO-11895 B74-10211 03
- LIQUID SLOSHING**
- Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
- LIQUID SODIUM**
- High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07

LIQUID SURFACES

Prolate spheroidal slosh model for fluid motion

MSC-13864 B72-10182 09

Two-axis leveling detector system

M-FS-21344 B72-10392 02

LIQUID-GAS MIXTURES

Low temperature fluid blender

LEWIS-11206 B71-10058 04

Determination of gas volume trapped in a closed fluid system

MSC-15685 B71-10094 06

Two-phase, passive separator-and-filter assembly

LANGLEY-10976 B74-10133 04

LIQUID-LIQUID INTERFACES

Preparation of stable colloidal dispersions in fluorinated liquids

HQ-10580 B72-10529 04

LIQUID-SOLID INTERFACES

Particle detection by a light-scattering technique

ARC-10384 B72-10160 03

LIQUID-VAPOR EQUILIBRIUM

Improved method for calculating pump thermodynamic suppression head

M-FS-20852 B71-10239 07

LIQUID-VAPOR INTERFACES

Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks

LEWIS-11208 B70-10628 03

Determination of gas volume trapped in a closed fluid system

MSC-15685 B71-10094 06

The heat pipe - A simple, versatile, efficient heat transfer tool

NPO-11598 B71-10109 06

Multichamber controllable heat pipe

ARC-10199 B71-10526 03

Boiler for generating high quality vapor

LEWIS-11345 B72-10135 06

LIQUIDS

Effect of wall roughness on liquid oscillations damping in rectangular tanks

M-FS-20799 B70-10388 06

Volume-checking tool

KSC-10514 B70-10502 07

Economic method for measuring ultra-low flow rates of fluids

NPO-12064 B70-10531 04

Spray momentum measuring system

MSC-12305 B71-10137 05

Measuring internal dimensions of small transparent objects

LANGLEY-10712 B71-10505 08

High-temperature, long-life thyatron

LEWIS-11327 B72-10134 01

Low frequency sinusoidal pressure generator

LEWIS-11465 B72-10477 01

Hydrophobic liquid/gas separator for heat pipes

ARC-10656 B72-10549 03

High strength high modulus ceramic fiber

M-FS-21266 B72-10592 04

Fast response densitometer for measuring liquid density

M-FS-14478 B72-10664 02

Diode-quad bridge for reactive transducers and FM discriminators

ARC-10364 B72-10691 01

Parallel-plate viscometer

NPO-11387 B72-10700 03

Floating baffle to improve efficiency of liquid transfer from tanks

KSC-10639 B73-10190 07

Automatic device for shell freezing of liquids

GSFC-11737 B73-10253 04

LIQUIDS

High-temperature nickel-brazing alloy

LEWIS-10928 B70-10537 08

LISTS

MAPS - a computerized management analysis and planning system

LEWIS-11349 B71-10321 09

Pictorial display of materials and processes aids in fabricating complex assemblies

M-FS-24006 B71-10341 01

LITERATURE

Metal-to-ceramic seals - A literature survey

NPO-11430 B71-10116 08

LITHIUM

Properties of nonaqueous electrolytes

LEWIS-11017 B70-10080 04

Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept

NPO-10755 B70-10090 07

Diffusion technique for lithium-doped silicon

GSFC-10827 B70-10148 01

High energy density electrochemical cell

LEWIS-10969 B70-10151 01

Detonation hazards with "safe" industrial solvents

LANGLEY-10299 B70-10404 04

Silicon solar cells improved by lithium doping

NPO-11390 B70-10585 04

Advances in electrometer vacuum tube design

GSFC-10729 B70-10696 01

High density plasma gun generates plasmas at 190 kilometers per second

M-FS-20589 B71-10383 03

Oxygen-layer structure improves lithium-doped silicon solar cells

NPO-11403 B72-10085 03

Introduction of lithium into the front surface of solar cells

NPO-11404 B72-10086 02

Gettering capsule for removing oxygen from liquid lithium systems

LEWIS-11509 B73-10002 04

LITHIUM ALUMINUM HYDRIDES

Preparation of perfluoropolyether prepolymers

NPO-10765 B71-10004 04

LITHIUM CHLORIDES

Polymer containing functional end groups is base for new polymers

NPO-10998 B71-10184 04

LITHIUM COMPOUNDS

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals

ERC-10463 B70-10269 03

Fabrication of electroacoustic RF amplifiers

ERC-10266 B70-10460 01

Initiation of polymerization by tetrabutylammonium p-lithiophenoxide

ARC-10553 B72-10223 04

Electron beam chemistry produces high purity metals

LEWIS-11639 B72-10439 04

Radiation-induced nickel deposits

LEWIS-10965 B72-10456 04

A new optical recording medium

M-FS-22348 B73-10095 03

LITHIUM FLUORIDES

Improved ultraviolet resonance lamp

ARC-10030 B70-10237 01

Neutron-image intensifier

ARG-10249 B70-10240 03

LITHIUM HYDRIDES

Computer program optimizes design of nuclear radiation shields

LEWIS-10998 B71-10400 09

LITHIUM HYDROXIDES

Design method for adsorption beds

HQ-10269 B70-10294 04

LITHIUM ISOTOPES

Boron-10 loaded inorganic shielding material

M-FS-22280 B72-10740 04

Fast-neutron spectrometer developments

M-FS-22279 B73-10116 03

LITHIUM NIOBATES

Acousto-optic filter for electronic laser tuning

HQ-10715 B72-10520 03

LITHIUM PERCHLORATES

High energy density electrochemical cell

LEWIS-10969 B70-10151 01

LITHOGRAPHY

Dual field alignment display and control for electron micropattern generator

M-FS-22118 B72-10646 01

Two-speed deflection system for electron micropattern generator

M-FS-22117 B72-10668 02

Stripe-line coil for magnetic-field generation in bubble memory devices

LANGLEY-11705 B75-10195 01

LIVER

Implantable prosthetic pump boosts blood pressure: A concept

NPO-13626 B75-10177 05

LOAD DISTRIBUTION (FORCES)

Tandem wheel drop-legs for standard truck trailer

M-FS-13466 B70-10088 07

Water impact loads

M-FS-21955 B72-10621 09

LOAD TESTING MACHINES

Combined high vacuum/high frequency fatigue tester

LEWIS-11210 B71-10405 06

Cable insulation cut-through tester

M-FS-20114 B71-10459 08

Biaxial compression test technique

MSC-14883 B75-10319 08

LOAD TESTS

Strain gage load measuring device - A concept

MSC-13385 B70-10326 01

Optimum structural design based on reliability analysis

NPO-11261 B70-10399 06

Standards for material handling and facilities equipment proofload testing

MSC-15788 B70-10526 07

LOADING

Combined high vacuum/high frequency fatigue tester

LEWIS-11210 B71-10405 06

LOADING MOMENTS

A concept for improving the dimensional stability of filamentary composites in one direction

LANGLEY-10443 B71-10061 04

Structural behavior of tapered inflated fabric cylinders under various loading conditions

MSC-15317 B71-10327 06

LOADS (FORCES)

High-field superconducting nested coil magnet

ARG-10060 B70-10061 03

Holographic stress analysis

M-FS-20687 B70-10123 01

Two terminal current limiter

NPO-11350 B70-10232 01

Stability of structural rings under uniformly distributed radial loads

NPO-11396 B70-10236 06

Test fixture insures high degree of accuracy in flexure tests

NUC-10246 B70-10358 07

Hoop restraint on beam-column behavior in a stiffened cylindrical shell

M-FS-16172 B70-10394 06

Thumb-actuated control device

ARC-10019 B70-10407 01

Strain compatibility tests for sprayed foam cryogenic insulation

M-FS-16063 B70-10423 04

Simple technique extends life of angular-contact ball bearings

LEWIS-11117 B70-10535 07

Electrothermal fracturing of tensile specimens

NUC-10185 B70-10566 07

Low temperature ablation models made by pressure/vacuum application

LANGLEY-10676 B70-10578 04

Interaction of crippling and torsional-flexural instabilities for centrally loaded columns

M-FS-20556 B70-10598 06

Repair of brazed steel honeycomb-sandwich panels with vertical pins only

MSC-15831 B70-10624 08

Adjustable support spring

ARC-10203 B70-10636 07

A study of NACA and NASA published information of pertinence in the design of light aircraft

LANGLEY-10778 B70-10725 06

Saturation current spikes eliminated in saturable core transformers

ERC-10125 B71-10142 01

Simple, shock-free, quick-release connector - A concept

LEWIS-11178 B71-10146 07

Isolated-line commutator-amplifier

M-FS-20734 B71-10148 02

Wind tunnel investigations at transonic Mach numbers

M-FS-20895 B71-10254 06

Method for determining failure potential of pressure vessels

M-FS-20564 B71-10270 06

NASTRAN computer system level 12.1

GSFC-10991 B71-10285 09

Instrument accurately measures stress loads in threaded bolts

M-FS-21121 B71-10486 01

Determination of impact sensitivity of materials at high pressures

MSC-13700 B72-10216 07

Energy absorber uses expanded coiled tube

AEC-10044 B72-10239 06

Ball bearing protector

M-FS-21612 B72-10322 07

Perload indicating turnbuckle

M-FS-21488 B72-10355 07

Multiple reaction mass and isolation system

M-FS-24119 B72-10441 06

Latch mechanism

M-FS-21606 B72-10457 08

Study of high altitude plume impingement

M-FS-21414 B72-10601 09

Water impact loads

M-FS-21955 B72-10621 09

Fluid operated quick release mechanism

M-FS-20205 B72-10640 07

Fiber composite materials: A survey of fiber matrix interface mechanics

LEWIS-11924 B73-10007 04

Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds

LANGLEY-11250 B73-10183 06

Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds

LANGLEY-11249 B73-10184 06

Structural analysis of viscoelastic materials under thermal and pressure loading

NPO-11727 B73-10301 09

Variable load indicator

M-FS-21728 B73-10335 07

Computer program for stress, vibration, and buckling characteristics of general shells of revolution

LANGLEY-11369 B73-10363 09

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow

LANGLEY-11175 B74-10091 06

Computer program for numerical analysis of stiffened shells of revolution

M-FS-23027 B75-10094 09

Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography

LEWIS-12502 B75-10138 03

LOCKING

Improved quick-disconnect electrical connector

M-FS-20610 B70-10109 01

High-powered automatic latching device

MSC-15474 B70-10198 07

Thumb-actuated control device

ARC-10019 B70-10407 01

Flexible or rigid extending arm

MSC-13512 B70-10465 07

Clocking connector replaces adapter cables

M-FS-14778 B71-10428 01

Foldable patterns form construction blocks

MSC-13860 B71-10523 08

Latch mechanism

M-FS-21606 B72-10457 08

Adjustable locking device

M-FS-21650 B72-10459 07

Fluid operated quick release mechanism

M-FS-20205 B72-10640 07

LOCKS

Adjustable locking device

M-FS-21650 B72-10459 07

LOCKS (FASTENERS)

Foolproof quick-release locking pin

M-FS-18495 B70-10409 07

Easy insert, easy release toggle bolt fastener

ARC-10140 B70-10509 07

Connector locking device

KSC-10537 B70-10553 01

Absolute focus lock for microscopes

LANGLEY-10184 B70-10728 07

LOCOMOTION

Triangular wheel locomotion mechanism

NPO-11366 B72-10714 06

LOCOMOTIVES

Prolate spheroidal slosh model for fluid motion

MSC-13864 B72-10182 09

LOGARITHMIC RECEIVERS

Log amplifier instrument measures physiological biopotentials over wide dynamic range

ARC-10032 B70-10508 01

High current compensation network for dc logarithmic amplifiers

NUC-10148 B71-10128 01

LOGARITHMS

A topological approach to computer-aided sensitivity analysis

ARC-10214 B71-10164 02

Low cost, logarithmic mass flow computer

LEWIS-11001 B71-10407 06

Table for estimating parameters of Weibull distribution

M-FS-18817 B71-10436 03

Wide-range logarithmic radiometer for measuring high temperatures

ARC-10254 B71-10498 01

Logarithmic-function generator

ERC-10267 B74-10285 02

LOGIC CIRCUITS

Slow-speed drives for miniature devices

NPO-10700 B70-10007 02

Digital data transition tracking loop improves data reception

NPO-10844 B70-10009 02

Array multiplier

ERC-90076 B70-10047 02

Block encoders for Reed-Muller codes

NPO-10629 B70-10051 01

Improved process of fabricating ferrite cores for magnetic logic circuits

LANGLEY-10036 B70-10104 04

Pulse rates recorded by digital film positioner

HQ-10358 B70-10141 01

Burst synchronization detection system

MSC-90317 B70-10159 02

Low power NAND gate

M-FS-14487 B70-10203 01

Switching circuits with fast response and low power drain

GSFC-10878 B70-10250 01

Two techniques for digital filter design

M-FS-20015 B70-10314 01

Flueric-controller pneumatic stepping motor system

LEWIS-11051 B70-10332 02

Electronically controlled motor drive system has ultra-high reliability and long lifetime

GSFC-10065 B70-10346 02

LOGIC DESIGN

SUBJECT INDEX

Complementary-MOS binary counter with parallel-set inputs
 ERC-10122 B70-10373 01
 Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
 KSC-10394 B70-10515 01
 Fail-safe numerical control
 M-FS-12613 B70-10522 02
 Technique for analyzing human respiratory process
 MSC-13436 B70-10528 05
 Solid state remote circuit selector switch
 LEWIS-10387 B70-10579 01
 Man-machine interactive system simplifies computer-aided circuit design
 LANGLEY-10711 B70-10660 09
 Miniature multicontact connectors
 LANGLEY-10740 B70-10724 01
 Active parallel redundancy for electronic integrator-type control circuits
 NUC-10231 B71-10040 01
 High-speed digital plotter
 ARG-90001 B71-10049 02
 Triangular-wave generator with controlled sweep polarity
 ARC-10332 B71-10166 03
 Efficient digital comparison technique for logic circuits
 M-FS-21080 B71-10218 02
 Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 Tone-activated, remote, alert communication system
 NPO-11132 B71-10307 02
 Calibration-interval adjustment indicator - A concept
 M-FS-18693 B71-10309 01
 Television multiplexing system
 KSC-10654 B71-10391 02
 Waveshaping electronic circuit
 M-FS-14916 B71-10429 01
 Digital aspect clock
 ARC-10088 B71-10440 02
 Digital parallel-to-series pulse-train converter
 MSC-12417 B71-10450 01
 Theory and application of feedback shift registers
 NPO-11486 B71-10451 02
 Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01
 Metabolic breath analyzer
 M-FS-21415 B71-10466 05
 Voter comparator switch provides fail safe data communications system - A concept
 MSC-13932 B71-10504 02
 New reaction tester accurate within 56 microseconds
 MSC-13604 B72-10031 05
 Topological solution of bilateral switching networks
 ARC-10294 B72-10055 01
 Technique minimizes the effects of dropouts on telemetry records
 NPO-11421 B72-10088 02
 Dual redundant core memory systems
 MSC-13993 B72-10261 09
 A rapid, precise, reciprocating-movement color filter system
 GSFC-11255 B72-10497 07

Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
 Irradiation of MOS-FET devices to provide desired logic functions
 GSFC-11061 B72-10719 01
 Automated analysis of blood pressure measurements (Korotkov sound)
 MSC-13999 B72-10756 05
 Digital notch filter
 KSC-10182 B73-10112 02
 Complementary MOS four-phase logic circuits
 JSC-14240 B73-10174 01
 Synchronous ten-megabit biphasic detector
 M-FS-22546 B73-10323 02
 Logical-function generator
 XLA-05099 B73-10360 09
 Programmable random interval generator
 JSC-14131 B73-10367 02
 Input-output, expandable-parity network
 HN-10728 B73-10479 02
 Digital transmitter for data bus communications system
 JSC-14558 B73-10511 02
 High voltage solid-state relay
 LEWIS-12096 B74-10006 01
 Data processor with conditionally supplied clock signals
 GSFC-10975 B74-10021 02
 Temperature compensation of digital inertial sensors
 NPO-13044 B74-10106 02
 Error-correcting codes for high-speed digital computers
 M-FS-22887 B74-10147 02
LOGIC DESIGN
 Temperature-controlled fluidic device A concept
 HQ-10446 B70-10167 03
 Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
 Logical-function generator
 XLA-05099 B73-10360 09
 Modular digital computer system design
 M-FS-22935 B74-10034 09
 Computerized logic design of digital circuits
 M-FS-22401 B74-10225 09
 Central control element expands computer capability
 M-FS-23216 B75-10103 02
 Real-time video correlator
 M-FS-23200 B75-10265 02
LOGICAL ELEMENTS
 Digital frequency discriminator
 M-FS-14322 B70-10010 01
 Array multiplier
 ERC-90076 B70-10047 02
 Bimorph piezoelectric device functions as flapper valve
 ERC-10082 B70-10382 01
 Multiport semiconductor devices
 ERC-10293 B70-10448 01
 Economical printed circuit front panel for computer use
 KSC-10573 B70-10560 01
 Ground computer test trap
 KSC-10574 B70-10561 09
 Digital input is buffered to real-time analog display
 KSC-10397 B70-10562 01

Digital decoder for phase-delay coded data
 GSFC-10894 B71-10345 01
 Computation of group table alphanumeric display
 LEWIS-11346 B71-10373 09
 Ferromagnetic-fluid logic devices
 ARC-10503 B72-10011 06
 Memory reduction through higher level language hardware
 M-FS-21128 B72-10350 09
LOGISTICS
 Medical vest broadens treatment capability
 KSC-10577 B70-10529 05
 Limited life item management
 M-FS-24020 B71-10196 06
LOGISTICS MANAGEMENT
 Logistics hardware and services control system
 KSC-10819 B73-10418 09
LONG TERM EFFECTS
 Drive mechanism for production of simulated human breath
 HQ-10777 B72-10659 05
 Long-term material compatibility testing system
 NPO-11776 B73-10385 04
LONGITUDE
 Orbit, reentry, and landing attachment for globes
 LANGLEY-10626 B70-10656 03
LONGITUDINAL STABILITY
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06
LONGITUDINAL WAVES
 Ultrasonic detection of flaws in fusion butt welds
 M-FS-20824 B70-10514 08
LOOP ANTENNAS
 Improved manual radio frequency direction finder
 M-FS-20507 B70-10422 02
 Tone-activated, remote, alert communication system
 NPO-11132 B71-10307 02
LOOPS
 Digital data transition tracking loop improves data reception
 NPO-10844 B70-10009 02
 Improved low cost ac-to-dc converter
 NPO-11055 B70-10076 01
 Burst synchronization detection system
 MSC-90317 B70-10159 02
 Precision full-wave rectifier
 ARC-10101 B70-10161 02
 Equipment-tolerant range code demodulation method - A concept
 M-FS-13987 B70-10267 01
 Efficient/reliable dc-to-dc inverter circuit
 XGS-06226 B70-10425 01
 Controlled current inductors
 ERC-10139 B70-10494 01
 Volume-checking tool
 KSC-10514 B70-10502 07
 A new solid-state logarithmic radiometer
 ARC-10287 B70-10633 02
 Active parallel redundancy for electronic integrator-type control circuits
 NUC-10231 B71-10040 01
 Polarographic carbon dioxide transducer amplifier
 MSC-13728 B71-10090 02

SUBJECT INDEX

Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Multiloop distributed RC active networks

ARC-10200 B71-10177 01
Pressure transducer with four-decade dynamic range
KSC-10384 B71-10323 01

Double phase-lock loop with rapid transient response - A concept
GSFC-10864 B71-10349 01

A study of nitride devices for computer memory applications
M-FS-20971 B71-10350 03

Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06

Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09

Stable photosensor amplifiers
NPO-11561 B72-10100 01

Hexapole magnet field analysis
GSFC-10995 B72-10113 03

Programmed physiological infusion system
ARC-10447 B72-10126 05

Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06

Fill-in binary loop pulse-torque quantizer
M-FS-23100 B75-10037 02

LORENTZ FORCE

Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04

LOSSES

Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07

Prediction of windage power loss in alternators
LEWIS-10939 B71-10074 06

Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 B71-10297 04

LOUDNESS

Methods for measuring the loudness and noisiness of complex sounds
HQ-10332 B70-10260 03

Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 B72-10579 05

LOUDSPEAKERS

Wein bridge oscillator circuit
MSC-13686 B71-10089 01

Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03

Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06

Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06

Improved audio reproduction system
ARC-10404 B72-10059 01

Scanning technique for tracking small eye-movements
ARC-10488 B72-10220 05

LOUVERS

Reduction of fan noise: A concept
ARC-10312 B72-10040 06

LOW ALTITUDE

A low-altitude satellite interaction study
GSFC-11384 B71-10499 09

LOW COST

The low-cost cryostat
NUC-11034 B70-10592 03

An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03

Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 B70-10653 07

Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04

Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04

Low cost anti-galling bushings
LEWIS-11724 B72-10359 08

Radiation-induced nickel deposits
LEWIS-10965 B72-10456 04

Flexible shielding system for radiation protection
LRL-10028 B72-10500 03

Thermocouple tape
LEWIS-11072 B72-10515 04

High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04

LOW DENSITY MATERIALS

Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06

Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06

Low-density polybenzimidazole foams for thermal insulation and fire protection
ARC-10823 B75-10056 04

Foam-machining tool with eddy-current transducer
M-FS-23298 B75-10309 08

LOW FREQUENCIES

A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01

Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04

Economical phased-array antenna for environmental applications
HQ-10434 B71-10057 02

Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02

Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01

Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03

Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03

Low frequency sinusoidal pressure generator
LEWIS-11465 B72-10477 01

Electronic high pass filter
LEWIS-11600 B74-10083 02

LOW NOISE

Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 B70-10508 01

LOW TEMPERATURE

A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02

Low-noise flow valve for air ducts
MSC-13441 B70-10640 07

Active tuning circuit
GSFC-11340 B73-10334 02

LOW PASS FILTERS

High-resolution spectral analysis
NPO-10748 B70-10039 01

Radio frequency baseband recording technique
HQ-10317 B70-10069 02

Design procedure for improved active filters
M-FS-20445 B70-10238 02

Constant-amplitude RC oscillator
ARC-10262 B70-10338 01

Artificial-feedback system
GSFC-10324 B70-10421 02

Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02

Metal detector system
ARC-10265 B70-10511 01

Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02

Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01

Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02

Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02

Tone-activated, remote, alert communication system
NPO-11132 B71-10307 02

Signal to noise measurement circuit
GSFC-11239 B72-10102 01

Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02

LOW PRESSURE

Use of thermodynamic properties of metal-gas systems as low-pressure standards
LANGLEY-10452 B70-10223 03

Low pressure arc electrode
ARC-10012 B70-10329 01

Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06

A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06

Devolatilization of polymer resins
GSFC-11358 B72-10280 04

LOW SPEED

A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 B70-10287 07

LOW SPEED WIND TUNNELS

Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 B71-10337 06

LOW TEMPERATURE

Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03

Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03

Low-temperature radiation-resistant material for ball-bearing retainers
NUC-10058 B70-10576 04

LOW TEMPERATURE ENVIRONMENTS

Low temperature ablation models made by pressure/vacuum application
 LANGLEY-10676 B70-10578 04
 Low temperature uses of helium
 LEWIS-11171 B70-10673 03
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
 Low temperature fluid blender
 LEWIS-11206 B71-10058 04
 Thermal conductivity of gaseous and liquid hydrogen
 NUC-10558 B71-10105 04
 Low-temperature bonding of temperature-resistant electronic connections
 M-FS-20909 B71-10253 08
 Improved elastomer for use with oxygen difluoride
 ARC-10528 B72-10027 04
 Low temperature catalytic ignition of hydrogen and oxygen
 ARC-10492 B72-10127 03
 Hydrogen eliminator
 ARC-10408 B72-10208 03
 Adhesive for aluminum withstands cryogenic temperatures
 M-FS-16848 B72-10346 04
 Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
 LEWIS-10800 B72-10454 04
 Temperature control of a cryogenic bath
 HQ-10788 B72-10532 03
 Shutoff and throttling valve
 NPO-11951 B74-10105 07
 Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
 LANGLEY-11589 B74-10263 08

LOW TEMPERATURE ENVIRONMENTS
 Strain compatibility tests for sprayed foam cryogenic insulation
 M-FS-16063 B70-10423 04
 A 7.6m /25-ft/ extreme environments simulator
 NPO-11353 B71-10036 03
 Dry ice plug for hydraulic and pneumatic pipe flushing
 MSC-12548 B72-10496 06
 Lightweight ducts fabricated from reinforced plastics and elastomers
 MSC-19482 B75-10173 06
 Compound heat pipe operates over broad temperature range
 M-FS-23329 B75-10313 06

LOW TEMPERATURE PHYSICS
 Proceedings of the Third Southeastern Seminar on Thermal Sciences
 M-FS-20627 B70-10135 03
 Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
 ARC-10560 B72-10278 03

LOW TEMPERATURE TESTS
 A vapor barrier for cold testing printed circuit cards
 M-FS-15115 B70-10172 01
 High precision cryogenic thermal conductivity standards
 NUC-10555 B70-10310 04
 Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
 M-FS-18753 B70-10364 04

Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
 LEWIS-11261 B71-10261 04
 Right angle mounted cold trap
 GSFC-11323 B72-10436 06
 A flexible all-temperature pressure vessel
 M-FS-19196 B73-10158 03

LOW THRUST
 Rapid analysis of electric propulsion missions
 ARC-10430 B72-10299 09

LOW THRUST PROPULSION
 Final report on a study of low-density nozzle flows, with application to microthrust rockets
 HQ-10761 B72-10748 06

LOW VOLTAGE
 Load cell for thermionic converter tests
 LEWIS-11068 B70-10470 01

LOW WEIGHT
 Two-stage coaxial gas compressor
 ARC-10426 B72-10210 06
 Light-weight spherical submergence vessel
 ARC-10838 B74-10114 08
 Lead-oxygen closed-loop battery system
 M-FS-23059 B74-10267 06
 Improved aircraft reaction nozzles
 ARC-10906 B75-10284 06

LUBRICANTS
 Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03
 Self-lubricating fluorine shaft seal material
 HQ-10112 B70-10222 04
 Liquid cryogenic lubricant
 LEWIS-11075 B70-10347 07
 Comparison of release torques of tightened bolts in vacuum and air
 M-FS-20773 B70-10395 06
 Filled polymers for bearings and seals used in liquid hydrogen
 LEWIS-10887 B70-10573 04
 TFE coating extends life of flexible metal compressor diaphragm
 LEWIS-11113 B70-10609 07
 Automatic, computerized testing of bolts
 NPO-11090 B70-10657 06
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
 LEWIS-11152 B71-10173 07
 Limited life item management
 M-FS-24020 B71-10196 06
 Effects of the thermal sterilization procedure on polymeric products
 NPO-11688 B71-10362 04
 Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 B71-10509 09
 Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04
 A tool for cutting ultra thin slits in metals
 KSC-10770 B72-10433 07
 Nonflammable and abrasion resistant coating process for glass fibers
 MSC-14024 B72-10445 08

Research on bearing lubricants for use in a high vacuum
 M-FS-22119 B72-10469 04
 Design criteria monograph for high-load high-speed rolling-contact bearings
 LEWIS-11823 B72-10627 04
 Freon 21 bearing lubrication and coolant system
 HQ-10302 B72-10651 06
 Lubrication handbook
 M-FS-22326 B73-10062 04
 Ferrolubricants
 M-FS-23151 B75-10078 07

LUBRICATING OILS
 Improved molecular sorbent trap for high-vacuum systems
 ARC-10056 B71-10478 03
 New full-complement ball bearing lubrication technique
 MSC-13850 B72-10174 07
 Chuck for delicate drills
 ARC-10660 B72-10414 07
 Potentiometer, constant tension and lubrication device
 KSC-10723 B72-10541 02
 Lubrication handbook
 M-FS-22326 B73-10062 04

LUBRICATION
 High pressure flow-rate switch
 NPO-10722 B70-10028 07
 Two-speed wheel-drive system without lubrication
 M-FS-20645 B70-10193 07
 Removal of flowmeter bearings from blind cavities
 M-FS-18713 B70-10227 06
 Technique for improving hydrodynamic gyro bearings
 M-FS-20764 B70-10301 06
 Low cost lobed bearing
 LEWIS-11076 B70-10343 07
 High-temperature electric stator
 LEWIS-10889 B70-10459 01
 Low-temperature radiation-resistant material for ball-bearing retainers
 NUC-10058 B70-10576 04
 Liquid-hydrogen/nuclear-radiation ant seals
 M-FS-21364 B71-10340 03
 Joint preload properties of structural threaded fasteners
 M-FS-21453 B71-10531 08
 Freon 21 bearing lubrication and coolant system
 HQ-10302 B72-10651 06
 Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
 LEWIS-11930 B74-10016 04
 Magnetic bearings with combined radial and axial control
 GSFC-11551 B74-10131 06

LUBRICATION SYSTEMS
 Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04
 New full-complement ball bearing lubrication technique
 MSC-13850 B72-10174 07
 Improved circumferential shaft seal
 LEWIS-11873 B74-10062 07

LUGS
 Electrical test wire attachment device
 KSC-10562 B70-10488 01

LUMINAIRES
 Improved ultraviolet resonance lamp
 ARC-10030 B70-10237 01

SUBJECT INDEX

SUBJECT INDEX

Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02

A conceptual current surge protector for incandescent lamps
M-FS-16658 B70-10483 01

Latching overcurrent circuit breaker
NPO-11131 B70-10524 01

Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 B70-10534 01

Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01

Time-lapse camera for microscopy
ARC-10423 B72-10125 05

Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03

Illumination control system
ARC-10527 B72-10167 02

Hand-held photomicroscopy system
ARC-10468 B72-10190 03

Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02

Tool for installing or extracting small bulbs in limited-access spaces
LANGLEY-11543 B73-10433 07

A low cost "Air Mass 2" solar simulator
LEWIS-12266 B74-10086 02

Lightweight protective clothing for the safe handling of high-intensity pressurized lamps
LEWIS-12073 B75-10007 04

LUMINANCE
Television noise-reduction device
JSC-12607 B73-10431 02

LUMINESCENCE
Luminescent screen composition and apparatus
ERC-10010 B70-10440 01

LUMINOUS INTENSITY
Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05

Laser beam hydrocarbon detector
ARC-10156 B70-10631 03

Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02

Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01

High solar intensity radiometer
LEWIS-11533 B72-10130 03

Illumination control system
ARC-10527 B72-10167 02

High intensity solar cell radiometer
LEWIS-11549 B72-10480 01

LUNAR BASES
Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07

LUNAR COMPOSITION
Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03

LUNAR FLIGHT
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09

LUNAR GRAVITY SIMULATOR
Constant tension device for gravity simulation
M-FS-21618 B72-10466 06

LUNAR LANDING
Quick response targeting program
M-FS-15157 B71-10147 09

LUNAR MAPS
Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03

LUNAR ORBITS
Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03

LUNAR ROCKS
Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03

LUNAR SATELLITES
Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03

LUNAR TOPOGRAPHY
Television camera as a scientific instrument
NPO-11164 B70-10209 03

Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03

LUNAR TRAJECTORIES
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09

Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07

LUNG MORPHOLOGY
Ultrastructural alteration of mouse lung by prolonged exposure to mixtures of helium and oxygen
ARC-10929 B75-10061 05

LUNGS
Balanced-bellows spirometer
XAC-01547 B72-10279 05

LYMPHOCYTES
Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05

M

MACH NUMBER
Discharge coefficients for thick-plate orifices
LEWIS-11067 B70-10062 06

Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03

Simplified computation of compressible fluid flow parameters
KSC-10400 B70-10225 06

Short-duration, transonic flow, variable-porosity test section
M-FS-20509 B70-10256 03

Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09

Quick calculation method for fluid flow through duct systems
M-FS-15069 B70-10487 02

Wind tunnel investigations at transonic Mach numbers
M-FS-20895 B71-10254 06

MACHINING

Continuous-flow variable-density wind tunnel facilities
NPO-11287 B72-10078 06

MACH-ZEHNDER INTERFEROMETERS
Holographic photography of high velocity particles
ERC-10318 B70-10371 03

Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 B73-10417 03

MACHINE TOOLS
Low-cost orbiting grinder for cutting ducts
M-FS-20684 B70-10126 07

Fiberglass honeycomb elements formed quickly and cheaply
LANGLEY-10125 B70-10342 08

Electronically controlled motor drive system has ultra-high reliability and long lifetime
GSFC-10065 B70-10346 02

Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06

Fail-safe numerical control
M-FS-12613 B70-10522 02

Simple technique extends life of angular-contact ball bearings
LEWIS-11117 B70-10535 07

Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07

Special wrench for B-nuts reduces torque stress in tubing
MSC-15885 B70-10550 07

A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09

Refrigerated cutting tools improve machining of superalloys
LANGLEY-10488 B71-10076 08

Portable lightweight bandsaw
M-FS-16927 B71-10237 07

Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 B71-10419 08

Tubing cutter
NPO-11524 B72-10095 07

Hydraulic valve lifter remover
M-FS-21377 B72-10110 07

A tool for cutting ultra thin slits in metals
KSC-10770 B72-10433 07

Universal drill jig
M-FS-24464 B73-10324 07

Dynamometer for measuring machining forces in two perpendicular directions
M-FS-22899 B74-10148 07

Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06

Foam-machining tool with eddy-current transducer
M-FS-23298 B75-10309 08

MACHINERY
Prediction of faults in components of machinery in motion
GSFC-10801 B70-10116 06

Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07

Nonlinear damping in structures
M-FS-20701 B70-10341 03

MACHINING
Use of acrylic sheet molds for elastomeric products
MSC-15636 B70-10019 08

- Phenolic cutter for machining foam insulation
M-FS-14170 B70-10089 07
A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
Universal router concept
M-FS-20756 B70-10313 07
Low cost lobed bearing
LEWIS-11076 B70-10343 07
Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 B70-10396 04
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Fail-safe numerical control
M-FS-12613 B70-10522 02
Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07
Compact fluid-flow restrictor
MSC-15803 B70-10679 07
Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08
Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
Modular construction provides large volume storage facility in minimum space
M-FS-13568 B71-10354 08
Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08
Sprue cutoff tool for molded FCC plugs
M-FS-20236 B71-10421 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Glass tube splitting tool
MSC-17183 B71-10516 07
Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
Universal inverted flexure
ARC-10345 B72-10122 07
A new low-cost method for producing collimating mirrors
LEWIS-11553 B72-10513 08
Machine finishes balls to high degree of roundness
M-FS-21448 B72-10595 08
- MAGIC TEES**
Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 B70-10457 02
- MAGNESIUM**
Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04
Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
Strain gage installation manual
M-FS-18822 B70-10715 06
- Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03
Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01
Plating by glass-bead peening
GSFC-11163 B71-10256 08
GaAs transistors formed by Be or Mg ion implantation
LANGLEY-11204 B73-10442 01
- MAGNESIUM OXIDES**
Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01
Improved linings for integrating spheres
MSC-12237 B70-10413 03
Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 B70-10432 04
Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
Improved magnesia for thermal control coatings
ARC-10677 B72-10424 04
Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04
- MAGNESIUM SULFATES**
Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 B70-10334 04
- MAGNETIC AMPLIFIERS**
Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
- MAGNETIC ANOMALIES**
Magnetometer with miniature transducer and automatic transducer scanning apparatus
LANGLEY-11617 B74-10142 02
- MAGNETIC COILS**
High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01
Laser beam deflection control: A concept
MSC-13814 B72-10411 02
Magnetic latching valve
NPO-11790 B73-10026 06
- Improved magnetic suspension technique
GSFC-11079 B74-10254 03
Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 B75-10195 01
Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 B75-10196 01
Bubble-domain circuit wafer evaluation coil set
LANGLEY-11728 B75-10197 01
Open coil structure for bubble-memory-device packaging
LANGLEY-11704 B75-10219 01
- MAGNETIC COMPASSES**
Magnetic-heading reference device
LANGLEY-11387 B74-10176 02
- MAGNETIC CONTROL**
Preparation of stable colloidal dispersions in fluorinated liquids
HQ-10580 B72-10529 04
Magnetic particle clutch controls servo system
JSC-17136 B73-10041 06
- MAGNETIC CORES**
Active resistance capacitance filter design
ARC-10020 B70-10034 01
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
Controlled current inductors
ERC-10139 B70-10494 01
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Saturable-reactor motor starter reduces line voltage fluctuations
M-FS-18921 B71-10013 01
Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
Pseudo-saturating power converter
NPO-11368 B72-10042 01
Analysis of circuits including magnetic cores (MTRAC)
NPO-11494 B72-10724 02
Flat-band assembly for toroidal transformer cores
NPO-11966 B73-10391 08
Design parameters for toroidal and bobbin magnetics
NPO-13441 B73-10459 01
- MAGNETIC EFFECTS**
Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- MAGNETIC FIELDS**
A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
Synthesis of diamonds
M-FS-20698 B70-10513 08
Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 B70-10620 03

SUBJECT INDEX

Development of superconductive magnets
LEWIS-11170 B70-10678 03
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
Improved charged-particle analyzer - A concept
XAC-05506 B71-10283 03
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Circuit controls turn-on current
NPO-11339 B72-10079 01
Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02
Hexapole magnet field analysis
GSFC-10995 B72-10113 03
Device for measuring electric fields
ARC-10164 B72-10148 03
Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06
Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
A manually set magnetic wire counter
AEC-10039 B72-10369 01
Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01
High temperature permeameter for measuring magnetic properties
LEWIS-11609 B72-10443 03
Wide-range nuclear magnetic resonance detector
LEWIS-11513 B72-10478 03
Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
Magnetometer uses bismuth-selenide
LEWIS-11632 B72-10629 03
Suspension of objects in magnetic and electric fields
JSC-14170 B73-10058 03
Compact 20-kiloampere pulse-forming-network capacitor bank
LEWIS-12009 B73-10171 01
Determining distance to lightning strokes from a single station
KSC-10698 B73-10178 02
Tetrad bubble domain chip arrangement for multiplexing
M-FS-22296 B73-10202 02
Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
LEWIS-11610 B73-10206 03
Magnetic bearings with combined radial and axial control
GSFC-11551 B74-10131 06

MAGNETIC FILMS
Coercive force of thin magnetic films
NPO-10750 B70-10221 03

Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 B74-10262 01

MAGNETIC FLUX
Brushless direct-current motor with stationary armature and field
XGS-05290 B70-10691 02
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
Pseudo-saturating power converter
NPO-11368 B72-10042 01
Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02
Ferrofluidic solenoid with axial and radial displacement
NPO-11738 B72-10241 06
Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
A brushless dc spin motor for momentum exchange altitude control
M-FS-14952 B72-10448 02
Current switch has built-in time delay: A concept
MSC-17324 B72-10453 01
Magnets with stabilized conductors
HQ-10727 B72-10465 03
An electric motor with magnetic bearings: A concept
XGS-07805 B73-10304 01

MAGNETIC INDUCTION
Hall effect encoding of brushless dc motors
GSFC-10789 B70-10188 01
Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
High-strength magnetic materials
LEWIS-10697 B70-10596 03
Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01
Electromagnetic connector
JSC-17420 B73-10125 07

MAGNETIC LENSES
Mass separator for low velocity ions
ARC-10375 B72-10123 03
Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
LEWIS-11610 B73-10206 03

MAGNETIC MATERIALS
High-strength magnetic materials
LEWIS-10697 B70-10596 03
Qualifications and certification of nondestructive testing personnel
M-FS-20850 B71-10271 06
Magnet-wire wrapping tool for integrated circuits
NPO-11815 B72-10426 07
Preparation of stable colloidal dispersions in fluorinated liquids
HQ-10580 B72-10529 04

MAGNETIC MEASUREMENT
Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01
Superconducting quantum-interference devices
M-FS-23163 B75-10097 03

MAGNETIC STORAGE

MAGNETIC MOMENTS
Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 B70-10581 03

MAGNETIC PERMEABILITY
Controlled current inductors
ERC-10139 B70-10494 01
Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01

MAGNETIC PROBES
Improved system for measuring speed of rotating machinery
ARC-10413 B72-10179 07
Magnetic circuitry mutual coupling probe
M-FS-21664 B72-10535 02

MAGNETIC PROPERTIES
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
ARG-10412 B70-10233 04
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
High temperature permeameter for measuring magnetic properties
LEWIS-11609 B72-10443 03
Magnets with stabilized conductors
HQ-10727 B72-10465 03
Preparation of stable colloidal dispersions in fluorinated liquids
HQ-10580 B72-10529 04
Analysis of circuits including magnetic cores (MTRAC)
NPO-11494 B72-10724 02
Design and material selection for inverter transformer cores
NPO-11726 B73-10142 04
Ferrolubricants
M-FS-23151 B75-10078 07

MAGNETIC PUMPING
Magnetocaloric pump
LEWIS-11672 B73-10124 07

MAGNETIC RECORDING
Radio frequency baseband recording technique
HQ-10317 B70-10069 02
Optically activated magnetic recording tape
GSFC-10275 B70-10247 01
Dropouts in magnetic tape recording and reproduction
NPO-11519 B71-10160 03
Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02
Subminiature micropower digital recorder
ARC-10746 B73-10491 02

MAGNETIC RESONANCE
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09

MAGNETIC SHIELDING
Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02
Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01

MAGNETIC STORAGE
A manually set magnetic wire counter
AEC-10039 B72-10369 01

MAGNETIC STORMS

Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09
 Fabrication of magnetic bubble memory overlay
 M-FS-22377 B73-10096 01
 Variable-gap bias structure for magnetic bubble memory package
 LANGLEY-11765 B75-10221 01
 Ellipsometer measurements of epitaxial GaAs layers: A concept
 M-FS-23238 B75-10230 01

MAGNETIC STORMS

Elimination of redundancy in telemetered data
 HQ-10585 B70-10431 06

MAGNETIC SUSPENSION

Performance evaluation system for inertial navigation equipment
 MSC-13542 B71-10087 02
 Hydrostatic liquid-bearing for precision gyro
 M-FS-21138 B71-10207 07
 Suspension of objects in magnetic and electric fields
 JSC-14170 B73-10058 03

MAGNETIC SWITCHING

High pressure flow-rate switch
 NPO-10722 B70-10028 07
 Constant-voltage drive current-steering switch
 NPO-10743 B70-10046 01

MAGNETIC TAPES

Pulse rates recorded by digital film positioner
 HQ-10358 B70-10141 01
 Optically activated magnetic recording tape
 GSFC-10275 B70-10247 01
 Expanded sun-look angle program
 MSC-13176 B70-10602 09
 Biomedical recording system
 MSC-13653 B70-10697 05
 Time Data Sequential Processor /TDSP/
 NPO-11327 B70-10720 09
 Fiscal output data produce versatile graphic-numeric charts
 NUC-10394 B71-10108 09
 Dropouts in magnetic tape recording and reproduction
 NPO-11519 B71-10160 03
 Computer-controlled mass spectrometer for on-line gas analysis
 NPO-11427 B71-10191 03
 Man-machine communication - A transparent switchboard for computers
 MSC-13746 B71-10263 02
 Digital decoder for phase-delay coded data
 GSFC-10894 B71-10345 01
 Solid-state data interpretation system - A concept
 M-FS-20587 B71-10366 02
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Frame modal analysis
 MSC-17562 B71-10414 09
 Automated preventive maintenance program
 GSFC-11408 B71-10500 09
 Video information system
 M-FS-21711 B72-10267 09
 Source deck compression and update program (CAPS)
 GSFC-11545 B72-10619 09

Recovery of recordings from heat damaged magnetic tapes
 JSC-14219 B73-10173 02
 Processor for high-density digital tape-recorded signals
 NPO-11399 B73-10354 02
 Subminiature micropower digital recorder
 ARC-10746 B73-10491 02
 Digital tape drive monitor
 GSFC-11925 B75-10153 02
 Position sensing materials wound on a reel
 GSFC-11902 B75-10249 07

MAGNETIC TRANSDUCERS

Kinetic inductance measured in a superconducting wire
 ERC-10305 B70-10491 03
 Solid-state controller
 JSC-12394 B73-10466 06

MAGNETIZATION

Subminiature micropower digital recorder
 ARC-10746 B73-10491 02

MAGNETO-OPTICS

Coercive force of thin magnetic films
 NPO-10750 B70-10221 03

MAGNETOHYDRODYNAMIC FLOW

Device measures conductivity and velocity of ionized gas streams
 XAC-05695 B71-10235 03

MAGNETOHYDRODYNAMIC GENERATORS

Separation of gas from liquid in a two-phase flow system
 NPO-11556 B73-10383 03
 Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
 LEWIS-12445 B75-10152 02

MAGNETOHYDRODYNAMICS
 Development of superconductive magnets
 LEWIS-11170 B70-10678 03
 Improved plasma accelerator
 ARC-10109 B71-10454 03
 Pulsed high-power arc heater with improved cathode and triggering mechanism
 ARC-10173 B72-10048 03
 Separation of gas mixtures by centrifugation
 ARC-10449 B72-10270 03

MAGNETOMETERS

Two-axis flux gate magnetometer
 GSFC-10441 B70-10345 01
 Kinetic inductance measured in a superconducting wire
 ERC-10305 B70-10491 03
 Coarse roll-rate gain-control circuit
 ARC-10064 B71-10204 01
 Improved laboratory gradiometer can be a field survey instrument
 MSC-13980 B72-10001 03
 Hexapole magnet field analysis
 GSFC-10995 B72-10113 03
 Glass technology involved in the manufacture of magnetometer components
 GSFC-11283 B72-10132 03
 Two-stage magnetometer measures weak magnetic fields
 AEC-10068 B72-10370 01
 Magnetometer uses bismuth-selenide
 LEWIS-11632 B72-10629 03

Magnetometer with miniature transducer and automatic transducer scanning apparatus
 LANGLEY-11617 B74-10142 02
 Magnetic-heading reference device
 LANGLEY-11387 B74-10176 02
 Microelectronic fabrication of superconducting devices and circuits
 NPO-13419 B75-10120 01

MAGNETORESISTIVITY

Stranded superconducting cable of improved design
 ARG-90108 B70-10070 01

MAGNETOSTRICTION

Coercive force of thin magnetic films
 NPO-10750 B70-10221 03
 Ultrasonic metal etching for metallographic analysis
 LEWIS-11230 B71-10099 04

MAGNETRONS

Improved magnetron cold-cathode ion source
 LANGLEY-10387 B70-10023 02

MAGNETS

Mounting, support, and isolation of various components of a hydrogen maser
 HQ-10563 B70-10032 02
 Stranded superconducting cable of improved design
 ARG-90108 B70-10070 01
 Hall effect encoding of brushless dc motors
 GSFC-10789 B70-10188 01
 Hall effect transducer gives electrical output proportional to meter shaft rotation
 LANGLEY-10620 B70-10298 01
 Multiple focusing magnets used for velocity selection of atoms
 GSFC-10128 B70-10581 03
 Brushless direct-current motor with stationary armature and field
 XGS-05290 B70-10691 02
 Hexapole magnet field analysis
 GSFC-10995 B72-10113 03
 Overlay board for control consoles
 ARC-10007 B72-10191 02
 A magnetic mouse activity meter
 HQ-10664 B72-10482 05

MAGNIFICATION

Holographic stress analysis
 M-FS-20687 B70-10123 01
 Electron fractography used to examine nickel-base alloys
 M-FS-18649 B70-10571 04
 Kaleidoscopic light feedback for television systems
 MSC-12386 B71-10068 03
 Pattern recognition technique
 NPO-11337 B71-10187 06
 Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 B71-10226 02
 Scale factor gage for fiber optics inspection device
 MSC-17361 B71-10496 07
 Shutter design for stereoscopic camera
 MSC-13613 B71-10506 03
 Optical alignment of electrodes on electrical discharge machines
 XAC-09489 B72-10036 07
 Bileaf mechanical strain gage
 ARC-10303 B72-10197 07
 Slitting flat conductor cables with the single cutting edge slitter
 M-FS-20111 B72-10575 07

SUBJECT INDEX

SUBJECT INDEX

MAINTAINABILITY

System availability management
technique for reliability and maintainability
analysis

KSC-10315 B70-10063 09

MAINTENANCE

Economical weatherproof helical
antenna

XKS-08485 B70-10016 01

Accurate reassembly of small broken test
specimens

M-FS-16730 B70-10455 07

Disc pack cleaning table saves computer
time

LANGLEY-10590 B70-10532 09

Easy manual operation of overhead
garage doors - A concept

KSC-10555 B70-10543 07

Repair of brazed steel
honeycomb-sandwich panels with vertical
pins only

MSC-15831 B70-10624 08

Dropouts in magnetic tape recording and
reproduction

NPO-11519 B71-10160 03

Limited life item management

M-FS-24020 B71-10196 06

Stored program concept for analog
computers

M-FS-20874 B71-10240 09

Automatic transmission line monitor

KSC-10385 B71-10288 02

Calibration-interval adjustment indicator
- A concept

M-FS-18693 B71-10309 01

Automated preventive maintenance
program

GSFC-11408 B71-10500 09

Positive fast sealing union connections

LEWIS-11290 B72-10133 06

Automated maintenance for complex
hybrid systems

NPO-13143 B74-10279 09

Fabrication and repair of graphite/epoxy
laminates

M-FS-23228 B75-10164 08

Repair of damaged insulation tiles

MSC-19549 B75-10321 04

MALFUNCTIONS

Diagnostic capability added to digital
events evaluator

KSC-10526 B71-10001 02

Predicting service life margins

M-FS-24015 B71-10194 06

Error-correcting codes for high-speed
digital computers

M-FS-22887 B74-10147 02

MAN MACHINE SYSTEMS

Man-machine interactive system
simplifies computer-aided circuit design

LANGLEY-10711 B70-10660 09

Man-machine communication - A
transparent switchboard for computers

MSC-13746 B71-10263 02

DC motor proportional control system
for orthotic devices

M-FS-21573 B72-10617 05

A proposed remote manipulator system:
A concept

MSC-14245 B72-10733 06

MANAGEMENT

Limited life item management

M-FS-24020 B71-10196 06

DSIF station schedules

NPO-11547 B71-10243 09

Automated preventive maintenance
program

GSFC-11408 B71-10500 09

Safety management of a complex R&D
ground operating system

LEWIS-12559 B75-10241 07

MANAGEMENT

SYSTEMS

Systems management techniques and
problems

M-FS-21401 B71-10361 01

Manpower management information
system / MIS/

M-FS-21477 B71-10431 09

Medical Information Management
System (MIMS): An automated hospital
information system

GSFC-11540 B73-10073 09

The Langley Research Center
NASA/PERT TIME III

LANGLEY-11887 B75-10302 09

MANAGEMENT METHODS

Manufacturing contamination prevention
handbook

M-FS-19113 B72-10394 08

Program for creating an operating system
generation cross reference index
(SGINDEX)

GSFC-11612 B72-10650 09

Motivation techniques for supervision

JSC-19187 B73-10448 05

MANAGEMENT PLANNING

System availability management
technique for reliability and maintainability
analysis

KSC-10315 B70-10063 09

PERT "C"

M-FS-20164 B70-10184 09

Systems approach provides management
control of complex programs

M-FS-20791 B70-10647 06

Proceedings of the Symposium on
Long-Life Hardware for Space

M-FS-20638 B70-10649 03

A report of advancements in structural
dynamic technology resulting from Saturn
5 programs

LANGLEY-10684 B70-10710 06

Manpower forecast program

NPO-11551 B71-10244 09

MAPS - a computerized management
analysis and planning system

LEWIS-11349 B71-10321 09

Computer program for discounted cash
flow/rate of return evaluations

M-FS-19040 B71-10377 09

Program audit, A management tool

KSC-10557 B71-10380 01

Technical management techniques for
identification and control of industrial safety
and pollution hazards

M-FS-21883 B72-10588 05

System/360 Computer Assisted
Network Scheduling (CANS) System

GSFC-10909 B72-10599 09

FORTMAN manpower account program

NPO-11973 B72-10623 09

MANAGEMENT SYSTEMS

Reliability analysis based on operational
success criteria

ARC-10490 B72-10214 09

MANDRELS

Improved method for cladding the inside
of metal tubes

LEWIS-11174 B70-10723 08

MANIPULATORS

Fabrication of large tungsten structures
by chemical vapor deposition

LEWIS-11239 B71-10212 08

Convuluted fabric for full-pressure
gloves

ARC-10529 B72-10215 04

Fabrication of uniaxial filament-reinforced
epoxy tubes for structural application

LANGLEY-10203 B72-10340 04

New compression molding process of
thermosetting plastic compounds

LANGLEY-10782 B72-10356 08

Dip molding to form intricately-shaped
medical elastomer devices

NPO-13535 B75-10238 08

MANEUVERABILITY

Stable, inflatable life raft for high seas
rescue operations

MSC-12393 B71-10167 05

Computerized methods for trafficability
analysis

M-FS-21423 B71-10484 03

Articulated elastic-loop roving vehicles

M-FS-22691 B73-10326 06

MANGANESE

Manganese bismuth thin film for large
capacity digital memories

M-FS-21246 B72-10107 03

Advanced infrared photomultiplier

M-FS-20941 B72-10152 03

MANGANESE ALLOYS

Coercive force of thin magnetic films

NPO-10750 B70-10221 03

MANIFOLDS

Rene 41 heat treatment electron
microscopy

M-FS-18633 B70-10081 04

Mechanical properties of Rene-41
affected by rate of cooling after solution
annealing

M-FS-18790 B70-10213 04

Economic gas chromatograph system for
subambient pressure gas sampling

M-FS-16298 B70-10220 02

The water-cryogen heat exchanger

NUC-11029 B70-10591 03

Development of a silver-zinc battery
system

NPO-11444 B70-10718 02

Automatic amino acid analyzer

ARC-10215 B71-10165 04

Device prepares aluminum surfaces for
welding

M-FS-20750 B71-10214 07

Digital computer program for analyzing
chugging instabilities

LEWIS-11294 B71-10215 09

Cast segment evaluation

M-FS-21354 B71-10363 08

Antipollution system to remove nitrogen
dioxide gas

LEWIS-11297 B71-10393 04

Liquid-fuel valve with precise throttling
control

NPO-10808 B71-10449 07

Dispersion ring reduces injector
orifice-to-orifice flow variation

MSC-15953 B72-10117 07

Interconnections for fluidic circuits

ARC-10481 B72-10164 02

Experimental study of flow distribution
with circumferential manifolds

LEWIS-11649 B72-10738 06

MANIPULATORS

Commutating brushes tested in dc
motors in dry argon atmospheres

ARG-10243 B70-10045 01

MANNED LUNAR SURFACE VEHICLES

SUBJECT INDEX

Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 B70-10348 07
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
A proposed remote manipulator system: A concept
MSC-14245 B72-10733 06
Advanced action manipulator system (ADAMS)
M-FS-22022 B73-10204 07
A proposed hand-tool assembly for robots
M-FS-22266 B73-10216 07
Master/slave manipulator system
ARC-10756 B73-10496 06

MANNED LUNAR SURFACE VEHICLES

Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07

MANNED SPACE FLIGHT

Shuttle orbiter storage locker system: A study
JSC-14448 B73-10287 08

MANNED SPACE FLIGHT NETWORK

Deep space network
NPO-11562 B72-10043 01
System/360 Computer Assisted Network Scheduling (CANS) System
GSFC-10909 B72-10599 09

MANNED SPACECRAFT

A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
Airlock caution and warning system
M-FS-21576 B72-10467 02
Graphics shadowing analysis
M-FS-21406 B74-10040 09

MANOMETERS

Volumetric leak detector
MSC-11325 B70-10302 07
Catheter transducer and circuit
ARC-10132 B71-10234 01
Traveling digital counters for micrometers
LANGLEY-11258 B73-10042 06

MANPOWER

Manpower forecast program
NPO-11551 B71-10244 09
MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
Manpower management information system /MIS/
M-FS-21477 B71-10431 09

MANUAL CONTROL

Testing device for verifying the performance of digital recorders
KSC-10300 B70-10149 01
High-powered automatic latching device
MSC-15474 B70-10198 07
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Thumb-actuated control device
ARC-10019 B70-10407 01
Improved manual radio frequency direction finder
M-FS-20507 B70-10422 02
Inexpensive automatic ranging for digital voltmeters and frequency counters
NUC-10240 B70-10530 01

Easy manual operation of overhead garage doors - A concept
KSC-10555 B70-10543 07
Fast peak selector for mass spectrometer
LANGLEY-10268 B71-10009 04
Unified hatch system
MSC-15813 B71-10095 06
Multimode ergometer system
M-FS-21044 B71-10107 05
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Overlay board for control consoles
ARC-10007 B72-10191 02

MANUALS

Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
Design and evaluation of brushless electrical generators
LEWIS-10124 B70-10554 02
FORTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
Induction brazing manual
M-FS-14924 B71-10123 08
Instruction manuals for radiographic nondestructive testing
M-FS-21350 B71-10156 06
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
Standard environmental testing practices
NPO-11567 B72-10101 02
The design of an automated verification of redundant systems
KSC-10702 B72-10295 02
Radiological control manual
M-FS-22092 B72-10460 03
Phase-change materials handbook
M-FS-22064 B72-10464 04
A linear programming manual
HQ-10743 B72-10671 09

MANUFACTURING

Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09
Pressurized suits can be fabricated with adjustable dimensions
MSC-12398 B71-10092 05
Phase locking of field sequential color wheel for small TV camera
MSC-13857 B71-10326 02
Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04

Packaging concept for LSI beam lead integrated circuits
M-FS-21374 B72-10329 07
Manufacturing contamination prevention handbook
M-FS-19113 B72-10394 08
Dual field alignment display and control for electron micropattern generator
M-FS-22118 B72-10646 01
Oven temperature controller for electronic components
GSFC-11466 B73-10052 02
Manufacture and quality control of interconnecting wire harnesses
M-FS-22511 B73-10211 01
Silicon-fiber blanket solar-cell array concept
M-FS-22458 B73-10374 01
Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
Isogrid design handbook
M-FS-22686 B73-10395 06
Welding high-strength aluminum alloys
M-FS-22918 B73-10481 04

MANY BODY PROBLEM

N-body U and K matrix program
LEWIS-11438 B73-10012 09

MAP (PROGRAMMING LANGUAGE)

Landing dynamics program for impact attenuating vehicles /LANDIT/
NPO-10840 B71-10472 09
GREMEX update (Goddard research engineering management exercise)
GSFC-11512 B73-10162 09

MAPPING

Water velocity meter
LANGLEY-10619 B70-10662 02
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
Elements of orbit-determination theory - Textbook
NPO-11486 B71-10425 03
Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03
Means for mapping radiated fields and for measuring differential movement of antenna elements
NPO-13053 B73-10452 02
Analysis of orbital heat transfer
ARC-10842 B74-10115 02
Computer program to generate engine inlet flow contour maps and distortion parameters
LEWIS-12247 B75-10005 09
Data processing large quantities of multispectral information
MSC-14472 B75-10080 03

MAPS

Orbit, reentry, and landing attachment for globes
LANGLEY-10626 B70-10656 03
Solar cell power scanner
LEWIS-11280 B71-10223 02
Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03

- Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 872-10606 09
- Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 874-10259 01
- MARAGING STEELS**
High-strength magnetic materials
LEWIS-10697 870-10596 03
- Practical method of diffusion-welding steel plate in air
LEWIS-11387 871-10455 08
- MARGINS**
Predicting service life margins
M-FS-24015 871-10194 06
- MARINE BIOLOGY**
Instrument detects bacterial life forms
GSFC-10972 871-10312 05
- Dye laser remote sensing of marine plankton
LANGLEY-11382 873-10359 05
- Miniature sonar fish tag
LANGLEY-11814 875-10092 02
- MARINE TECHNOLOGY**
Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 875-10282 06
- MARINER PROGRAM**
Squib-operated disconnect
NPO-11330 872-10713 06
- MARKING**
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 874-10020 07
- Automatic marker for photographic film
MSC-14705 874-10152 03
- MARS LANDING**
Landing dynamics program for impact attenuating vehicles /LANDIT/
NPO-10840 871-10472 09
- Particle detection by a light-scattering technique
ARC-10384 872-10160 03
- MARS PROBES**
Squib-operated disconnect
NPO-11330 872-10713 06
- MARS SURFACE**
Sheet plastic filters for solar cells
NPO-11464 872-10090 04
- MARTENSITIC STAINLESS STEELS**
High-strength magnetic materials
LEWIS-10697 870-10596 03
- MASERS**
Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 870-10032 02
- A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 870-10033 01
- Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 870-10441 03
- Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 870-10572 02
- Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 870-10581 03
- System automatically tunes hydrogen masers
HQ-10502 870-10616 02
- Microwave cryogenic thermal-noise standards
NPO-11424 871-10139 03
- Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 871-10308 09
- Improved masers for X-band and Ku band
NPO-11437 873-10293 02
- Improved thermal isolation for superconducting magnet systems
NPO-11875 874-10158 02
- Transmission line for S-band masers
NPO-13504 875-10126 03
- Reflected-wave maser
NPO-13490 875-10279 03
- MASKING**
Sputter etching of hemispherical bearings
HQ-10712 872-10534 08
- Improved photoetching fabrication method
LEWIS-11268 872-10745 08
- Sputtered gold mask for deep chemical etching of silicon
LANGLEY-11661 875-10089 08
- MASKS**
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 871-10238 09
- MASONRY**
Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 871-10358 07
- MASS**
Microbalance accurately measures extremely small masses
HQ-09962 870-10607 01
- Inertia diaphragm pressure transducer
XAC-2981 871-10200 05
- Frame modal analysis
MSC-17562 871-10414 09
- Prolate spheroidal slosh model for fluid motion
MSC-13864 872-10182 09
- Simple turbine balancing test apparatus
LEWIS-11658 872-10377 07
- Multiple reaction mass and isolation system
M-FS-24119 872-10441 06
- MASS DISTRIBUTION**
Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 872-10004 03
- Gravitational gradiometer measures mass changes
M-FS-20814 872-10140 03
- Determination of bone mineral mass in vivo
MSC-14276 875-10168 05
- MASS FLOW**
Controlled droplet spray generator
LEWIS-11193 870-10652 07
- Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 870-10668 07
- Low cost, logarithmic mass flow computer
LEWIS-11001 871-10407 06
- Experimental study of flow distribution with circumferential manifolds
LEWIS-11649 872-10738 06
- Rocket plume properties measured in space simulators
NPO-11608 873-10137 03
- Mass flow controller for gaseous propellants
JSC-14221 873-10207 06
- Fluidic device for measuring constituent masses of a flowing binary gas mixture
LEWIS-11995 873-10230 06
- MASS FLOW RATE**
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 870-10317 09
- Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 870-10362 07
- Hydraulic characteristics of flow through miniature slits
NPO-11354 870-10400 07
- Computer program for natural gas flow through nozzles
LEWIS-11534 872-10362 09
- Electrical gas heater with large flow range capability
LEWIS-12361 875-10024 03
- MASS SPECTRA**
Analysis of low resolution mass spectra
GSFC-11279 871-10267 09
- Three bit mass spectral search program
NPO-11960 872-10747 09
- MASS SPECTROMETERS**
Improved magnetron cold-cathode ion source
LANGLEY-10387 870-10023 02
- Mass spectrometer detects high molecular weight components
HQ-10477 870-10057 01
- Photoionization mass spectrometer
HQ-10167 870-10113 03
- Improved photoionization mass spectrometer
LANGLEY-10180 870-10402 04
- Fast peak selector for mass spectrometer
LANGLEY-10268 871-10009 04
- Computer-controlled mass spectrometer for on-line gas analysis
NPO-11427 871-10191 03
- Metabolic breath analyzer
M-FS-21415 871-10466 05
- Helium leak measurements using CO2 as a carrier
M-FS-21742 872-10354 03
- Laser mass spectrometer
ARC-10687 872-10571 03
- Comparative performance of double-focus and quadrupole mass spectrometers
NPO-11689 872-10702 03
- Magnetic latching valve
NPO-11790 873-10026 06
- Ion masking improves resolution in quadrupole mass spectrometers
GSFC-11406 873-10181 03
- Unified life detection system: A concept
ARC-10769 873-10377 05
- Graphite ionization vacuum gauge
LANGLEY-11338 874-10136 03
- Negative ion spectrometry for detecting nitrated explosives
NPO-13082 874-10276 02
- Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 875-10185 03
- Electro-optical detector to improve sensitivity of a focal-plane mass spectrometer
NPO-13524 875-10328 03
- MASS SPECTROSCOPY**
Quantitative conversion of water to carbon dioxide
NPO-10731 870-10013 04

- Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04
- Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 B70-10177 04
- Combining micro dry column chromatography and mass spectrometry
NPO-11240 B70-10231 03
- Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03
- Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
- Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
- Leak decay method of helium bombardment leak testing
M-FS-24109 B72-10381 06
- Micrometeoroid velocity-and-trajectory analyzer
GSFC-11889 B74-10286 01
- Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
- Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04
- Automated mass spectrometer/analysis system: A concept
NPO-13572 B75-10331 05
- MASS TRANSFER**
- Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 B70-10094 04
- Design method for adsorption beds
HQ-10269 B70-10294 04
- Floating baffle to improve efficiency of liquid transfer from tanks
KSC-10639 B73-10190 07
- MATCHING**
- Quasi-optical equivalent of waveguide slide screw tuner
ERC-10312 B70-10384 01
- Improved modified turnstile antenna
MSC-12209 B70-10482 01
- MATERIAL ABSORPTION**
- Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
- MATERIALS HANDLING**
- Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
- Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
- High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07
- Systems management techniques and problems
M-FS-21401 B71-10361 01
- Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 B71-10475 05
- Positive fast sealing union connections
LEWIS-11290 B72-10133 06
- Tool carrier
M-FS-21469 B72-10319 07
- Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03
- High pressure liquid gas pump
MSC-14087 B72-10590 06
- A proposed remote manipulator system: A concept
MSC-14245 B72-10733 06
- Geysering inhibitor pipe
KSC-10615 B73-10110 07
- Automatic microbial transfer
LANGLEY-11354 B73-10229 05
- Liquid and gaseous oxygen safety review
LEWIS-12041 B73-10310 04
- Guidebook of nondestructive evaluation techniques for materials and structures
LEWIS-12272 B74-10122 04
- Lightweight protective clothing for the safe handling of high-intensity pressurized lamps
LEWIS-12073 B75-10007 04
- MATERIALS RECOVERY**
- Composite casting demonstration
M-FS-21668 B72-10266 04
- Electrophoresis separator combining centrifugal separation
M-FS-21396 B73-10328 04
- MATERIALS SCIENCE**
- New understanding of fiber composite materials
NPO-11605 B71-10161 04
- MATERIALS TESTS**
- Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
- Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04
- Flame resistant elastic elastomeric fibers
MSC-13923-4 B72-10005 04
- Devolatilization of polymer resins
GSFC-11358 B72-10280 04
- Graphite and boron-reinforced composite materials data summary
M-FS-21691 B72-10294 04
- Protective encapsulation of implantable biotelemetry units
ARC-10514 B72-10301 05
- Strengthening lightweight concrete
AEC-10017 B72-10430 04
- Equations to assess the impact resistance of fiber composites
LEWIS-11486 B72-10503 04
- Laser mass spectrometer
ARC-10687 B72-10571 03
- Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04
- Joining porous components to solid metal structures
LEWIS-11259 B72-10754 08
- Isometric scan method for ultrasonic evaluation of composite panels
LEWIS-12437 B75-10014 01
- MATHEMATICAL MODELS**
- A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05
- Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
- System availability management technique for reliability and maintainability analysis
KSC-10315 B70-10063 09
- Optimizing insulation weight on cryogenic storage tanks
KSC-10399 B70-10102 03
- A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
- Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
- Finite fringe hologram
HQ-10347 B70-10271 03
- Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
- Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
- Information retrieval system
HQ-10426 B70-10556 09
- Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
- A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
- A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06
- Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
- Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
- Generalized safety equation - A concept
M-FS-20522 B71-10183 06
- Microbial burden prediction model program
NPO-11709 B71-10401 09
- Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
- A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
- Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
- Sunspot analysis and prediction
M-FS-21724 B72-10317 03
- A study of the power spectral density of an FM signal
M-FS-21070 B72-10361 02
- Evaluating foam heterogeneity
AEC-10046 B72-10365 04
- Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07
- Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04
- Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04
- Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06
- Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09

SUBJECT INDEX

Computer program to generate attitude error equations for a gimbal platform
M-FS-21991 B72-10624 09

A study of radiation environment in space and its biological effects
HQ-10798 B72-10662 03

Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03

Chrysler improved numerical differencing analyzer for third generation computers CINDA-3G
MSC-11653 B72-10721 09

Experimental verification of computer spray-combustion models
ARC-10689 B73-10031 03

Mathematical model for predicting human vertebral fracture
ARC-10691 B73-10033 05

Large boron-epoxy filament-wound pressure vessels
NPO-11900 B73-10038 08

Computer program calculates quasi-one-dimensional flow across face seals and narrow slots
LEWIS-11996 B73-10248 09

Marshall system for aerospace simulation (MARSYAS)
M-FS-22672 B73-10432 09

Model optimization using statistical estimation
M-FS-22873 B74-10189 09

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09

Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09

Calculation of aerodynamic characteristics of STOL aircraft
ARC-10882 B74-10221 09

Handbook for estimating toxic fuel hazards
M-FS-21114 B75-10198 04

Marshall vehicle-engineering simulation system (MARVES)
M-FS-21701 B75-10199 06

Automated statistical analysis program (ASAP)
LANGLEY-11125 B75-10217 02

High-accuracy programable square-law detector system
NPO-13525 B75-10240 02

MATHEMATICAL TABLES

Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04

Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09

Zeros of certain cross products of Bessel functions of fractional order
LEWIS-12221 B74-10012 03

MATHEMATICS

Theory and application of Kalman filtering
M-FS-20491 B70-10309 06

MATRICES (CIRCUITS)

Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01

Digital-voltage curve generator
NPO-11104 B70-10590 02

Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01

Waveshaping electronic circuit
M-FS-14916 B71-10429 01

Theory and application of feedback shift registers
NPO-11486 B71-10451 02

Voter comparator switch provides fail safe data communications system - A concept
MSC-13932 B71-10504 02

Interferometer using RF switching matrix
GSFC-11051 B72-10462 01

MATRICES (MATHEMATICS)

Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03

Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06

Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09

ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09

Stored program concept for analog computers
M-FS-20874 B71-10240 09

DSIF station schedules
NPO-11547 B71-10243 09

Information quality-control model
NPO-11431 B71-10281 06

Determination of radiation interchange factors
MSC-13475 B71-10295 09

Closed-loop control of stochastic nonlinear systems
MSC-13858 B71-10306 09

Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09

Study-simulation of space station dynamics
M-FS-21227 B71-10382 09

Elements of orbit-determination theory - Textbook
NPO-11466 B71-10425 03

Algorithm for Liapunov stability analysis
ARC-10498 B72-10023 09

Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09

Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09

Snap dynamics
M-FS-21531 B72-10265 09

Cubic spline functions for curve fitting
LRL-10034 B72-10311 09

Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09

Computer program to generate attitude error equations for a gimbal platform
M-FS-21991 B72-10624 09

Program to reduce the size of structural matrices
MSC-17619 B72-10625 09

MEASURE AND INTEGRATION

Analytic procedures for determining dimensional redundancies in electronic devices
HQ-10709 B72-10656 09

Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09

A linear programming manual
HQ-10743 B72-10671 09

N-body U and K matrix program
LEWIS-11438 B73-10012 09

Node-recording method for stiffness matrix wavefront reduction in structural analysis
NPO-11620 B73-10296 09

Stiffness and mass matrices for shells of revolution (SAMMSOR II)
JSC-14494 B73-10446 09

MATRIX METHODS

Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 B70-10183 04

A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06

Frame modal analysis
MSC-17562 B71-10414 09

Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09

Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04

Synthesis of dynamic systems
M-FS-21490 B71-10491 09

MAXIMUM LIKELIHOOD ESTIMATES

Statistical analysis tables for truncated or censored samples
M-FS-21024 B71-10351 03

MAXIMUM PRINCIPLE

Global search algorithm for optimal control
ARC-10359 B70-10637 09

MAXWELL BODIES

Axisymmetric and cylindrical isostable structures - A concept
NPO-12049 B71-10446 06

MCLEOD GAGES

Photoionization mass spectrometer
HQ-10167 B70-10113 03

MEAN

Statistical analysis tables for truncated or censored samples
M-FS-21024 B71-10351 03

Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02

Control of acceleration in sine/random vibration tests
NPO-11482 B72-10091 02

Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09

MEAN FREE PATH

Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01

Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03

MEASURE AND INTEGRATION

Subroutines for evaluating single and multiple integrals using modified Romberg method
NPO-11718 B71-10138 09

MEASUREMENT

Analytical methods for bacterial kinetics studies
 LRL-10011 B71-10192 05
 Atmospheric pollution measurement by optical cross correlation methods - A concept
 M-FS-12078 B71-10224 02
 Variable order integrators for the numerical solution of ordinary differential equations
 NPO-11643 B71-10248 09
 NASTRAN computer system level 12.1
 GSFC-10991 B71-10285 09
 High efficiency telemetry method
 NPO-10388 B71-10371 02

MEASUREMENT

Projections of scan patterns on human retina
 ARC-10181 B72-10193 05
 Nondispersive infrared analyzer for specific gases in complex mixtures
 ARC-10308 B72-10198 03
 A method for calculating the effects of design errors and measurement errors on pump performance
 LEWIS-11503 B72-10292 07

MEASURING INSTRUMENTS

Improved apparatus for continuous culture of hydrogen-fixing bacteria
 HQ-09000 B70-10001 05
 A simple tester provides resonant frequency measurements of ferrite devices
 NPO-10678 B70-10033 01
 High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01
 General technique for measurement of refractive index variations
 HQ-10359 B70-10064 01
 Telemetry for impact acceleration measurements
 ARC-10289 B70-10079 01
 Water surface depth instrument
 LANGLEY-10576 B70-10103 07
 Laser-Doppler gas velocimeter
 M-FS-20583 B70-10143 02
 Determination of diffusion lengths in silicon by an X-ray method
 LEWIS-10984 B70-10150 01
 Electronic position indicator for latching solenoid valves
 LEWIS-10926 B70-10174 01
 Prediction of gas leakage of environmental control systems
 HQ-10270 B70-10201 05
 Television camera as a scientific instrument
 NPO-11164 B70-10209 03
 Use of thermodynamic properties of metal-gas systems as low-pressure standards
 LANGLEY-10452 B70-10223 03
 Heat-resistant pressure probe with high-frequency response
 NPO-11292 B70-10252 06
 Hall effect transducer gives electrical output proportional to meter shaft rotation
 LANGLEY-10620 B70-10298 01
 Post-operative cranial pressure monitoring system
 ERC-10336 B70-10436 05
 Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 B70-10447 05
 Volume-checking tool
 KSC-10514 B70-10502 07

Three-dimensional pantograph for use in hazardous environments
 NUC-10222 B70-10567 07
 Gage for measuring coastal erosion and sedimentation
 LANGLEY-10779 B70-10629 01
 Toroidal mirrors provide virtual walls for breaks in light pipes
 ARC-10031 B70-10632 03
 A new method for measuring slipperiness of airport runways and other paved surfaces
 LANGLEY-10795 B70-10712 06
 Electronic strain-level counter
 LANGLEY-10756 B70-10716 02
 Universal interface enables one recorder to serve numerous measuring instruments
 M-FS-15134 B71-10011 01
 System accurately controls pressure in cryogenic tanks
 LEWIS-11329 B71-10118 03
 Electrical instrument measures position and velocity of shock waves
 ARC-10356 B71-10143 03
 Fast carry accumulator design
 M-FS-20902 B71-10274 01
 Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
 LEWIS-11116 B71-10397 06
 Planet geometric center tracker
 ARC-10084 B71-10445 02
 Miniature battery-operated electromagnetic system for blood flow measurements
 ARC-10362 B71-10477 05
 Distribution and metering system for soil samples
 ARC-10429 B71-10481 07
 Scale factor gage for fiber optics inspection device
 MSC-17361 B71-10496 07
 An improved aesthesiometer
 MSC-13609 B72-10032 05
 Improved device measures performance of batteries under load
 ARC-10252 B72-10051 02
 Device for measuring electric fields
 ARC-10164 B72-10148 03
 Particle detection by a light-scattering technique
 ARC-10384 B72-10160 03
 Solar sensor with autocollimator
 ARC-10148 B72-10192 03
 Continuous monitor for gas ratios in a mixture
 LEWIS-11095 B72-10229 05
 Pressure-probe assembly for wind tunnels
 ARC-10569 B72-10248 03
 Balanced-bellows spirometer
 XAC-01547 B72-10279 05
 Multipurpose top for liquid helium Dewar
 ARC-10533 B72-10302 03
 A compact spectroradiometer for solar simulator measurements
 HQ-10683 B72-10327 03
 Noncontact torque measurement using stroboscopic techniques
 MSC-12282 B72-10332 07
 Blood pressure measurement and display system
 MSC-13036 B72-10334 05
 Deflection resistance indicator
 M-FS-24010 B72-10401 04

New meter probes provide protection from high current power sources at potentials up to 600 volts
 LANGLEY-10804 B72-10455 01
 Wide-range nuclear magnetic resonance detector
 LEWIS-11513 B72-10478 03
 Metastable atom probe for measuring electron beam density profiles
 M-FS-21593 B72-10485 03
 Indexing film with a fluidic sensor
 MSC-14117 B72-10501 02
 A tool for measuring elevator cable tension
 KSC-10708 B72-10509 07
 A reusable prepositioned ATP reaction chamber
 HQ-10660 B72-10525 05
 Carbon dioxide concentration indicator
 HQ-10582 B72-10526 05
 Sensor capsule for diagnosis of gastric disorders
 HQ-10767 B72-10531 05
 A stagnation pressure probe for use in supersonic flow
 LANGLEY-11139 B72-10543 06
 Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
 LEWIS-11270 B72-10546 06
 Overflow sensor for cryogenic-fluid vessels
 NPO-10619 B72-10554 03
 Leak test system
 M-FS-21788 B72-10576 06
 Linear accelerator: A concept
 KSC-10618 B72-10636 06
 An optical quality meter suitable for cryogenic liquids
 LEWIS-11814 B72-10686 06
 Diode-quad bridge for reactive transducers and FM discriminators
 ARC-10364 B72-10691 01
 Automatic method of measuring silicon-controlled-rectifier holding current
 LEWIS-11898 B72-10752 02
 Remote measurements by telephone
 LEWIS-11704 B73-10010 02
 Apparatus for measuring electrical properties of materials
 NPO-11749 B73-10025 03
 Automatic quadrature control and measuring system
 M-FS-21660 B73-10127 02
 A simple, accurate depth check gauge
 JSC-17166 B73-10150 06
 Rocket borne instrument to measure electric fields inside electrified clouds
 KSC-10730 B73-10176 03
 Multihead measuring tape
 LANGLEY-11266 B73-10193 07
 A self-supporting strain transducer
 LANGLEY-11263 B73-10201 06
 Meter circuit for tuning RF amplifiers
 NPO-11865 B73-10389 02
 Low-cost clearance indicator for high speed turbomachinery
 LEWIS-12128 B73-10411 02
 Probes for measuring noise current in an electronic cable
 NPO-13123 B73-10454 02
 Instrument for measuring thin-film belt lengths
 NPO-13149 B73-10455 06
 Low cost instrumentation amplifier
 LEWIS-12222 B74-10015 01

SUBJECT INDEX

SUBJECT INDEX

Combustion products generating and metering device
 GSFC-11095 B74-10036 04

Magnetometer with miniature transducer and automatic transducer scanning apparatus
 LANGLEY-11617 B74-10142 02

Pocket gauge for checking insert clocking of multipin circular connectors
 NPO-11924 B74-10160 01

Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
 LEWIS-12445 B75-10152 02

Determination of water content using mass spectrometry
 LANGLEY-11774 B75-10157 04

Laser-excited fluorescence for measuring atmospheric pollution
 NPO-13231 B75-10275 02

Inexpensive pocket-size solar energy meter (insolometer)
 LEWIS-12598 B75-10283 01

Sound separation probe
 LEWIS-12507 B75-10286 03

MECHANICAL DEVICES

Split radius-form blocks for tube benders
 MSC-15773 B70-10038 08

Mechanical sieve for screening mineral samples
 HQ-10242 B70-10083 04

Magnetic gear backup
 MSC-13408 B70-10087 07

Tandem wheel drop-legs for standard truck trailer
 M-FS-13466 B70-10088 07

Improved mechanical remote control assembly - Concept
 M-FS-16249 B70-10144 07

An electrothermally actuated micro valve
 NPO-10730 B70-10171 07

Removal of flowmeter bearings from blind cavities
 M-FS-18713 B70-10227 06

Fast-acting, four-way slide valve
 M-FS-18608 B70-10228 07

Self-sealing propellant-actuated device eliminates atmosphere contamination
 NPO-11013 B70-10248 07

Inflatable stretcher to transport patients
 HQ-10179 B70-10254 05

Manually operated elastomer heat pump
 NPO-10677 B70-10270 03

Inexpensive tamper proof safety relief valve
 KSC-10470 B70-10320 07

Low cost lobed bearing
 LEWIS-11076 B70-10343 07

Flexible or rigid extending arm
 MSC-13512 B70-10465 07

Easy insert, easy release toggle bolt fastener
 ARC-10140 B70-10509 07

Easy manual operation of overhead garage doors - A concept
 KSC-10555 B70-10543 07

Hydraulically operated tilt table
 M-FS-21047 B71-10024 05

Producing graphite with desired properties
 NUC-11001 B71-10042 04

Accelerated battery-life testing - A concept
 GSFC-11085 B71-10348 06

Ultrathin gate valve for high vacuum operation
 GSFC-11028 B71-10412 07

Low-friction ball-and-socket
 NPO-11348 B72-10081 08

Hydraulic valve lifter remover
 M-FS-21377 B72-10110 07

New full-complement ball bearing lubrication technique
 MSC-13850 B72-10174 07

Bileaf mechanical strain gage
 ARC-10303 B72-10197 07

Separation of gas mixtures by centrifugation
 ARC-10449 B72-10270 03

Space suit may have orthotic applications
 ARC-10275 B72-10297 05

Cutting thin sections of bone
 ARC-10555 B72-10303 05

Ball bearing protector
 M-FS-21612 B72-10322 07

Remote weighing device
 M-FS-21556 B72-10325 07

Portable electron beam weld chamber
 MSC-17738 B72-10338 06

Stem clutch for motor driven valve
 LRL-10032 B72-10345 07

Perload indicating turnbuckle
 M-FS-21488 B72-10355 07

Two-axis leveling detector system
 M-FS-21344 B72-10392 02

Chuck for delicate drills
 ARC-10660 B72-10414 07

Magnet-wire wrapping tool for integrated circuits
 NPO-11815 B72-10426 07

Combination pressure regulator and safety valve: A Concept
 MSC-14088 B72-10446 06

Latch mechanism
 M-FS-21606 B72-10457 08

Constant tension device for gravity simulation
 M-FS-21618 B72-10466 06

Ball detent mechanism
 M-FS-21735 B72-10470 07

Improved high-temperature gimbal joint
 LEWIS-11705 B72-10489 06

No-err typing aids
 M-FS-15218 B72-10498 07

Tandem steerable running gear
 M-FS-22012 B72-10499 07

Self-aligning, low-pressure sealing poppet valve
 MSC-17745 B72-10538 07

Restraint and locomotion aid
 ARC-10153 B72-10558 06

Vise to hold bones or other irregular objects
 ARC-10679 B72-10569 07

Self-deploying boom
 GSFC-10566 B72-10574 07

Study of hot hardness characteristics of tool steels
 LEWIS-11785 B72-10583 04

High pressure liquid gas pump
 MSC-14087 B72-10590 06

Sprag solenoid brake
 M-FS-21846 B72-10669 06

Improved lip seal for rotating shafts
 LEWIS-11602 B72-10672 07

A concept for universal pliers
 KSC-10768 B72-10685 07

A shut-off valve for flexible tubing
 M-FS-21731 B72-10687 07

MECHANICAL DRIVES

Concentric-seating poppet
 NPO-11658 B72-10704 06

Advanced action manipulator system (ADAMS)
 M-FS-22022 B73-10204 07

A proposed hand-tool assembly for robots
 M-FS-22266 B73-10216 07

High-friction mechanical grips
 JSC-19260 B73-10234 06

Improved geneva mechanism
 LANGLEY-11443 B74-10030 06

Precision glasscutter
 LANGLEY-11604 B74-10031 07

Computer program for spacecraft-booster separation spring selection, set composition, and location determination
 GSFC-11616 B74-10037 09

Heat-transfer thermal switch
 LANGLEY-11232 B74-10092 06

Apparatus for heat treating plastic belts
 NPO-13205 B74-10299 02

MECHANICAL DRIVES

Slow-speed drives for miniature devices
 NPO-10700 B70-10007 02

Mechanical characteristics of the Bossler coupling
 HQ-10508 B70-10072 07

Four-way, full-throttling valve concept
 MSC-13437 B70-10165 07

Two-speed wheel-drive system without lubrication
 M-FS-20645 B70-10193 07

Optimal electric-drive system for vehicles
 NPO-11210 B70-10435 02

Induction generator produces constant-frequency voltage from variable-speed drive
 ERC-10065 B70-10478 02

Special wrench for B-nuts reduces torque stress in tubing
 MSC-15885 B70-10550 07

Remote coupling of air lines
 NUC-10225 B71-10101 07

Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07

Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06

Lubricant selection for gear designers
 LEWIS-11483 B72-10136 04

Improved high-performance shock tube
 NPO-11885 B72-10242 03

Rotary shutter mechanism contains optical elements
 GSFC-11244 B72-10387 03

High-speed, self-acting shaft seal (circumferential type)
 LEWIS-11274 B72-10447 07

Drive mechanism for production of simulated human breath
 HQ-10777 B72-10659 05

High torque bellows seal rotary drive
 LEWIS-11813 B72-10681 07

Mechanical planetary compensating drive system
 ARC-10462 B73-10497 06

Solar array deployment from a spinning spacecraft
 ARC-10787 B74-10048 06

Digital tape drive monitor
 GSFC-11925 B75-10153 02

MECHANICAL IMPEDANCE

Mechanical impedance and acoustic mobility measurement techniques of specifying vibration environments
M-FS-22016 B73-10059 06

In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05

MECHANICAL MEASUREMENT

Computer program for spacecraft-booster separation spring selection, set composition, and location determination
GSFC-11616 B74-10037 09

MECHANICAL PROPERTIES

Testing filamentary composites
HQ-10268 B70-10004 04

Mechanical characteristics of the Bossler coupling
HQ-10508 B70-10072 07

Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04

Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04

Surface treatment for valve seats
NPO-10779 B70-10202 08

High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02

Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04

Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06

Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 B70-10273 04

Improved welding of Rene-41
M-FS-18821 B70-10367 08

Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04

Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06

Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07

Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 B70-10612 04

Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03

Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 B71-10022 03

Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01

Flat-conductor cable has rotary and linear flexibility
M-FS-21096 B71-10242 01

Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 B71-10261 04

Environmental effects on silicon solar cells
NPO-11475 B71-10282 02

Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04

Strong, easy-to-mold, spiral buttress thread
LANGLEY-10755 B71-10336 08

Low-friction ball-and-socket
NPO-11348 B72-10081 08

New full-complement ball bearing lubrication technique
MSC-13850 B72-10174 07

New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04

Simple, reproducible methods for thermal shock testing of brittle materials
NUC-11020 B72-10228 06

High strength, medium density molded foam
AEC-10053 B72-10235 04

Space suit may have orthotic applications
ARC-10275 B72-10297 05

Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04

Improved universal electrical connector
M-FS-14741 B72-10363 01

Polymeric binder for explosives
AEC-10062 B72-10366 04

Bondability of RTV silicon rubber
AEC-10026 B72-10367 04

Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04

Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04

Latch mechanism
M-FS-21606 B72-10457 08

PTFE films with improved flexibility
NPO-12028 B72-10551 04

Micro-scale crease-and-fold apparatus
NPO-12029 B72-10552 06

Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06

Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04

Flexible thermal device
M-FS-21630 B72-10612 04

Improved lip seal for rotating shafts
LEWIS-11602 B72-10672 07

The weld-brazing metal joining process
LANGLEY-11072 B72-10683 08

Joining porous components to solid metal structures
LEWIS-11259 B72-10754 08

An inexpensive and effective method for calculating the strength of randomly reinforced fiber composites
LEWIS-11985 B73-10039 04

Residual stress effects on the impact resistance and strength of fiber composites
LEWIS-11984 B73-10063 04

Autoclave heat treatment for prealloyed powder products
LEWIS-11953 B73-10172 04

Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04

Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04

Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01

Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03

Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09

Fracture toughness testing data: A technology survey and bibliography
LEWIS-12503 B75-10139 03

Influence of heat treatment on mechanical properties of 300M steel
MSC-14792 B75-10271 04

A flame-resistant modified polystyrene
MSC-14903 B75-10320 04

MECHANICAL SHOCK

Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01

Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 B71-10168 08

Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06

Energy absorber uses expanded coiled tube
AEC-10044 B72-10239 06

Energy absorbing system for mechanical impacts
NPO-10671 B72-10712 06

MECHANISM

New full-complement ball bearing lubrication technique
MSC-13850 B72-10174 07

MECHANIZATION

New procedure for design of self-adaptive control systems
LANGLEY-10255 B70-10115 02

Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09

Automatic marker for photographic film
MSC-14705 B74-10152 03

MEDICAL ELECTRONICS

Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 B70-10447 05

Heart simulator
M-FS-21609 B72-10131 02

Protective encapsulation of implantable biotelemetry units
ARC-10514 B72-10301 05

Improved ultrasonic biomedical measuring apparatus
ARC-10597 B72-10695 05

Improved electrodes for skin contacts
M-FS-21926 B72-10698 05

Insulated ECG electrodes
JSC-14339 B73-10220 05

MEDICAL EQUIPMENT

Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05

The effects of nuclear power generators upon electronic instrumentation
NPO-11217 B70-10272 03

Medical vest broadens treatment capability
KSC-10577 B70-10529 05

Hydraulically operated tilt table
M-FS-21047 B71-10024 05

EKG isolator
M-FS-21236 B71-10124 05

Tilt table for ergometers and other biomedical devices
M-FS-21010 B71-10241 05

SUBJECT INDEX

A system for the automatic measurement and digital display of systolic and diastolic blood pressures
 MSC-13227 B71-10329 05
 Miniature battery-operated electromagnetic system for blood flow measurements
 ARC-10362 B71-10477 05
 Scale factor gage for fiber optics inspection device
 MSC-17361 B71-10496 07
 An improved aesthesiometer
 MSC-13609 B72-10032 05
 Weight simulator
 ARC-10100 B72-10046 05
 Heart simulator
 M-FS-21609 B72-10131 02
 Cutting thin sections of bone
 ARC-10555 B72-10303 05
 Small, low cost, artificial kidney
 AEC-10011 B72-10371 05
 Ultrasonic bone densitometer
 M-FS-20994 B72-10450 05
 Sensor capsule for diagnosis of gastric disorders
 HQ-10767 B72-10531 05
 Patient's breath controls comfort devices
 LANGLEY-11138 B72-10533 05
 Tissue holder for experimental and Demonstration Surgery
 LEWIS-11755 B72-10630 05
 A system for automatic analysis of blood pressure data for digital computer entry
 LEWIS-11751 B72-10632 05
 Automated analysis of blood pressure measurements (Korotkov sound)
 MSC-13999 B72-10756 05
 An economical arterial-pulse-wave transducer
 GSFC-11531 B73-10046 05
 Flexible electroencephalogram (EEG) headband
 LANGLEY-10927 B73-10048 05
 Intensive care alarm system
 GSFC-11377 B73-10126 02
 A new dry biomedical electrode
 JSC-14321 B73-10146 02
 Microminiaturized, biopotential conditioning system (MBCS)
 JSC-14180 B73-10236 02
 New system for bathing bedridden patients
 ARC-10745 B73-10272 05
 Vectorcardiogram
 JSC-14427 B73-10401 02
 Flexible temperature probe for biological systems
 ARC-10796 B73-10498 05
 Very high voltage latching relay
 LEWIS-12265 B74-10079 01
 Therapeutic hand-exercising device with cycling pressure value
 LANGLEY-11579 B74-10140 05
 Portable automatic blood analyzer
 MSC-14627 B75-10041 05
 Subminiature transducers for measuring forces and deformation of heart muscle
 NPO-13423 B75-10051 05
 Mobile automatic metabolic analyzer
 M-FS-23143 B75-10077 05
 Oxygen cocoon for patients under intensive care
 MSC-12663 B75-10079 05
 Regulator for intravenous feeding
 ARC-10758 B75-10083 05

Implantable prosthetic pump boosts blood pressure: A concept
 NPO-13626 B75-10177 05
 Catheter-tip force transducer for cardiovascular research
 NPO-13643 B75-10211 05
 Dip molding to form intricately-shaped medical elastomer devices
 NPO-13535 B75-10238 08
MEDICAL PERSONNEL
 Liquid-cooled liner for helmets
 ARC-10534 B74-10249 05
MEDICAL SCIENCE
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05
 Instrument detects bacterial life forms
 GSFC-10972 B71-10312 05
 Improved temperature control of liquid cooling garments
 MSC-13917 B72-10281 05
 Cutting thin sections of bone
 ARC-10555 B72-10303 05
 Compression and R-wave detection of ECG/VCG data
 MSC-14126 B72-10391 05
 Sensor capsule for diagnosis of gastric disorders
 HQ-10767 B72-10531 05
 Patient's breath controls comfort devices
 LANGLEY-11138 B72-10533 05
 Tissue holder for experimental and Demonstration Surgery
 LEWIS-11755 B72-10630 05
 Automated analysis of blood pressure measurements (Korotkov sound)
 MSC-13999 B72-10756 05
 Medical Information Management System (MIMS): An automated hospital information system
 GSFC-11540 B73-10073 09
MEDICAL SERVICES
 Medical vest broadens treatment capability
 KSC-10577 B70-10529 05
 Systems management techniques and problems
 M-FS-21401 B71-10361 01
MEDICINE
 Determination of bone mineral mass in vivo
 MSC-14276 B75-10168 05
MELTING
 Improved electron-beam welding technique
 M-FS-20714 B70-10127 08
 Heat-barrier coatings for combustion chambers
 M-FS-18618 B70-10363 07
 Improved electron beam welding technique
 M-FS-20753 B70-10412 08
 High temperature glass coatings for superalloys and refractory metals
 LEWIS-10700 B70-10430 08
 Analysis of surface ablation of noncharring materials
 ARC-10223 B70-10615 09
 Modification of physical properties of freeze-dried rice
 MSC-13540 B71-10259 04
 Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 B71-10303 04

MEMBRANE STRUCTURES

Removal of filler material from large high energy formed parts
 M-FS-16326 B72-10104 06
 Noncontaminating technique for making holes in existing process systems
 LEWIS-11595 B72-10385 07
 Floating zone process for drawing small diameter fibers of refractory materials
 LEWIS-11380 B72-10491 04
MELTING POINTS
 High temperature rare earth solid lubricants
 LEWIS-10983 B70-10175 04
 Improved reinforcement for openings in difficult fabrics
 MSC-13554 B70-10489 08
 P-n junctions formed in gallium antimonide
 ERC-10302 B70-10500 01
 High-temperature nickel-brazing alloy
 LEWIS-10928 B70-10537 08
 Parallel-gap welding for joints between copper conductors and Kovar
 M-FS-21224 B71-10168 08
 Preparation of homogeneous vitreous materials for electronic and optical devices
 HQ-10670 B71-10172 04
 Low-temperature bonding of temperature-resistant electronic connections
 M-FS-20909 B71-10253 08
 High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
 LEWIS-11229 B71-10489 04
 Restartable heat pipe
 ARC-10198 B72-10188 03
 Research on bearing lubricants for use in a high vacuum
 M-FS-22119 B72-10469 04
 Binary alloys for refractory-metal brazing
 LEWIS-12184 B74-10125 08
MEMBRANE STRUCTURES
 Axisymmetric and cylindrical isostable structures - A concept
 NPO-12049 B71-10446 06
 Method for calculating the stresses in pressure vessels
 MSC-13515 B71-10514 06
 Use of thin plastic films at cryogenic temperatures
 LEWIS-11047 B72-10038 04
 Cell for electrolysis of water vapor
 ARC-10521 B72-10166 03
 Space-suit carbon dioxide absorption system: A concept
 ARC-10546 B72-10168 05
 Stabilization of porous glass reverse-osmosis membranes
 ARC-10646 B72-10309 04
 Technique for producing wind-tunnel heat-transfer models
 ARC-10658 B72-10349 08
 Purification of contaminated water by filtration through porous glass
 ARC-10655 B72-10412 04
 Rapid evaluation of reverse-osmosis membranes
 ARC-10659 B72-10413 04
 Reverse-osmosis membranes by plasma polymerization
 ARC-10696 B72-10710 04

MEMBRANES

Use of nonwetable membranes for water transfer

LANGLEY-10743 B70-10235 04

Water purification by reverse osmosis using heterocyclic polymer membranes

LANGLEY-10514 B72-10230 04

An efficient, simple dialyzer

HQ-10741 B72-10522 05

Improved ion exchange membrane

NPO-13309 B75-10117 04

Amplifying ribbon extensometer

LANGLEY-11825 B75-10300 06

Using permeable membranes to produce hydrogen and oxygen from water

MSC-12600 B75-10314 04

MEMORY

Efficient digital comparison technique for logic circuits

M-FS-21080 B71-10218 02

MERCURY (METAL)

Fuse and switch functions combined within a single housing

HQ-10497 B70-10003 01

Coulometer battery state-of-charge indicator

LEWIS-11083 B70-10323 01

Traveling-wave photodetector has sub-nanosecond response

GSFC-10831 B70-10641 02

Microwave biasing improves detector response in the infrared region

GSFC-11050 B71-10313 01

Laser device provides accurate reference to true gravitational vertical

ARC-10444 B71-10479 07

Mercury in the environment

AEC-10048 B72-10233 05

MERCURY ARCS

Optical contamination during thermal testing in vacuum

M-FS-20736 B70-10659 03

Oscillating tank circuit eliminates ballast resistor in lamp control circuit

M-FS-20891 B71-10275 01

Scanning technique for tracking small eye-movements

ARC-10488 B72-10220 05

MERCURY LAMPS

Compact apparatus for photogeneration of hydrated electrons

ARG-10487 B70-10036 03

Scanning technique for tracking small eye-movements

ARC-10488 B72-10220 05

MERCURY VAPOR

Condensation of wet vapors in turbines

NPO-10773 B70-10613 09

Improved electron emitter

LEWIS-10814 B71-10388 03

MERIDIONAL FLOW

Computer program for calculating aerodynamic forces on blade sections

LEWIS-11382 B71-10153 09

MESH

High-field superconducting nested coil magnet

ARG-10060 B70-10061 03

Dopant for sodium niobate capacitor dielectric

MSC-11773 B70-10190 01

ELAS8 - Computer program for linear structure equilibrium problems

NPO-11555 B71-10185 09

Fabrication of large tungsten structures by chemical vapor deposition

LEWIS-11239 B71-10212 08

NASA-tricot - A lightweight radar reflective, knitted fabric

LANGLEY-10776 B71-10342 04

Removal of filler material from large high energy formed parts

M-FS-16326 B72-10104 06

High voltage electrical insulation coating for refractory materials

LEWIS-11479 B72-10290 04

Redirecting electromagnetic beams through wide angles

ARC-10602 B72-10307 03

MESSAGES

Optical design and analysis program

GSFC-11393 B71-10456 09

METABOLIC WASTES

Insolubilization process increases enzyme stability

ARC-10314 B71-10443 04

Oxygen reclamation with solid oxide electrolytes

ARC-10487 B72-10273 03

Trace contaminant adsorption and sorbent regeneration in closed ecological systems

LANGLEY-10681 B72-10328 04

Metered oxygen supply aids treatment of domestic sewage

ARC-10024 B72-10557 05

Gas chromatography of volatile organic compounds

JSC-14428 B73-10406 04

METABOLISM

Improved apparatus for continuous culture of hydrogen-fixing bacteria

HQ-09000 B70-10001 05

Analytical methods for bacterial kinetics studies

LRL-10011 B71-10192 05

Metabolic balance analysis program

M-FS-21237 B71-10384 09

Cell for electrolysis of water vapor

ARC-10521 B72-10166 03

A continuous physiological data collector

M-FS-20835 B72-10402 05

Metered oxygen supply aids treatment of domestic sewage

ARC-10024 B72-10557 05

Breathing-metabolic simulator

HQ-10766 B72-10657 05

Metabolic simulation chamber

HQ-10776 B72-10658 05

Temperature and humidity control of simulated human breath

HQ-10778 B72-10660 05

Automated method for study of drug metabolism

ARC-10469 B73-10030 04

Potassium food supplement

JSC-14391 B73-10177 05

Pseudotachometer for mobile metabolic analyzer

M-FS-22909 B73-10480 02

Detecting and measuring metabolic byproducts by electrochemical sensing

LANGLEY-11525 B73-10523 05

Mobile automatic metabolic analyzer

M-FS-23143 B75-10077 05

Automated mass spectrometer/analysis system: A concept

NPO-13572 B75-10331 05

METAL AIR BATTERIES

Improved operation of rechargeable oxygen electrodes

LEWIS-11619 B72-10479 01

Lead-oxygen closed-loop battery system

M-FS-23059 B74-10267 06

METAL BONDING

Inorganic bonding of semiconductor strain gages

GSFC-10833 B70-10215 08

Practical method of diffusion-welding steel plate in air

LEWIS-11387 B71-10455 08

The weld-brazing metal joining process

LANGLEY-11072 B72-10683 08

New concept in brazing metallic honeycomb panels

LANGLEY-10957 B73-10358 08

Process for preparing polyimide adhesives

LANGLEY-11397 B75-10257 08

METAL COATINGS

High temperature rare earth solid lubricants

LEWIS-10983 B70-10175 04

High expansion coefficient glasses can be sealed to common metals

LEWIS-10698 B70-10429 08

High-temperature oxidation and erosion-resistant refractory coatings

LEWIS-11221 B70-10634 04

Fixture for plating stripped conductors of flat conductor cables /FCC/

M-FS-20122 B70-10719 08

Improved high-temperature metal-sheathed cables

NUC-10413 B71-10102 01

Electroplating on titanium alloy

M-FS-21251 B71-10338 08

High intensity solar cell radiometer

LEWIS-11549 B72-10480 01

Compact 20-kiloampere pulse-forming-network capacitor bank

LEWIS-12009 B73-10171 01

Process for the production of star-tracking reticles

GSFC-11188 B73-10488 03

Lightweight, high speed bearing balls: A concept

LEWIS-11087 B74-10013 06

Survey of coatings for solar collectors

LEWIS-12510 B75-10067 04

METAL COMPOUNDS

Simple spectroscope used with solid state image amplifier over wide spectral range

M-FS-21345 B71-10378 03

METAL CRYSTALS

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide

HQ-10450 B70-10206 04

Crystal growing by electrodeposition from dense gaseous solutions

NPO-10440 B70-10676 04

METAL CUTTING

Vee-notch tool cuts specimens

M-FS-20730 B70-10411 06

Metal drilling with portable hand drills

M-FS-15180 B70-10594 08

Metal-shearing energy absorber

HQ-10638 B71-10503 07

Optical alignment of electrodes on electrical discharge machines

XAC-09489 B72-10036 07

Dynamometer for measuring machining forces in two perpendicular directions

M-FS-22899 B74-10148 07

METAL DRAWING

Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08

METAL FATIGUE

Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04
Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06

METAL FILMS

Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01
High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
Multiport semiconductor devices
ERC-10293 B70-10448 01
Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
High-temperature ceramic-to-ceramic seals
ARC-10319 B72-10199 04

METAL FINISHING

Optical alignment of electrodes on electrical discharge machines
XAC-09489 B72-10036 07

METAL FOILS

Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
Boron aluminum composite structures
M-FS-21571 B72-10386 04
Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04
Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 B72-10406 04

Flexible thermal device
M-FS-21630 B72-10612 04
Corrugated battery electrode
GSFC-11368 B73-10515 01
Honeycomb battery plaque
GSFC-11367 B73-10519 01
Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04

METAL GRINDING

Electro-chemical grinding
LANGLEY-10801 B72-10744 08

METAL HALIDES

Radiochemical synthesis of pure anhydrous metal halides
LEWIS-11860 B73-10407 04

METAL HYDRIDES

A superior process for forming titanium hydrogen isotopic films
LEWIS-12083 B75-10001 03

METAL IONS

Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04

METAL JOINTS

High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08
Method of joining metals of significantly different expansion rates
NPO-12076 B71-10028 08
The weld-brazing metal joining process
LANGLEY-11072 B72-10683 08
Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 B73-10258 08
Low-closing-force seal
ARC-10775 B73-10380 06
Inhibiting Kirkendall void growth in welded bimetallic structures
LEWIS-11573 B75-10006 08

METAL MATRIX COMPOSITES

Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 B71-10356 04
Fabrication techniques for thorium-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
Composite casting demonstration
M-FS-21668 B72-10266 04
Boron aluminum composite structures
M-FS-21571 B72-10386 04
Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
Fiber composite materials: A survey of fiber matrix interface mechanics
LEWIS-11924 B73-10007 04
Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08

METAL OXIDE SEMICONDUCTORS

Solid state switch provides high input-to-output isolation
HQ-10488 B70-10022 01
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Array multiplier
ERC-90076 B70-10047 02
Precision full-wave rectifier
ARC-10101 B70-10161 02

Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
One-shot multivibrator with complementary metal-oxide-semiconductor components
MSC-13492 B70-10305 01
Integrated circuit random-access memory decoder
ERC-10211 B70-10372 01
Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01
Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 B70-10374 09
Concept for a distributed processor computer
ERC-10271 B70-10481 02
A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 B71-10375 08
Topological solution of bilateral switching networks
ARC-10294 B72-10055 01
Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01
Irradiation of MOS-FET devices to provide desired logic functions
GSFC-11061 B72-10719 01
Gate protective device for SOS array
HQ-10745 B72-10755 01
Complementary MOS four-phase logic circuits
JSC-14240 B73-10174 01
P-channel silicone gate FET
M-FS-22505 B73-10197 01
Integrated p-channel MOS gyrator
M-FS-22343 B73-10217 02
Radiation hardening of metal-oxide semiconductor (MOS) devices by boron
GSFC-11425 B74-10026 01
Interactive graphical computer-aided design system
M-FS-23157 B75-10096 01
Page composer to translate binary electrical data to optical form
M-FS-22589 B75-10161 02

METAL OXIDES

Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
Exothermic brazing units
M-FS-21435 B71-10467 08

METAL PLATES

Regenerable metallic oxide systems for removal of carbon dioxide: A concept
ARC-10570 B72-10420 04

METAL PLATES

Strain gage load measuring device - A concept
MSC-13385 B70-10326 01
Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04
Synthesis of diamonds
M-FS-20698 B70-10513 08
Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
Fixture for plating stripped conductors of flat conductor cables /FCC/
M-FS-20122 B70-10719 08
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08
Improved charged-particle analyzer - A concept
XAC-05506 B71-10283 03
Superconductor transition temperatures study
M-FS-21247 B71-10385 03
Folding tools for flat conductor cable harnesses
M-FS-20121 B71-10415 08
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
Experimental study of surface cracks
MSC-14032 B72-10019 04
Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04
Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06
Strain arrestor plate for mounting rigid insulating tiles
JSC-14182 B73-10465 06

METAL POLISHING

Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08
A new low-cost method for producing collimating mirrors
LEWIS-11553 B72-10513 08
Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
MSC-14247 B72-10616 08

METAL POWDER

Vibration damping of mechanical seals
M-FS-14160 B70-10068 07
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Plating by glass-bead peening
GSFC-11163 B71-10256 08

Granular two-phase insulation systems
NPO-12068 B71-10290 04
Fabrication of large ceramic electrolyte disks
ARC-10320 B72-10202 03
Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04

METAL SHEETS

Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04
Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
Flexible protection for metal bellows
KSC-10520 B70-10350 06
Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 B71-10356 04
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07
A monostrain test apparatus
M-FS-24221 B72-10679 06
Improved photoetching fabrication method
LEWIS-11268 B72-10745 08
Beam lead forming tool
M-FS-22133 B73-10098 07
Embossed metal diaphragm has two-way stretch
NPO-11635 B73-10298 08
Biaxial compression test technique
MSC-14883 B75-10319 08

METAL SHELLS

High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08

METAL SPINNING

Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08

METAL STRIPS

Improved mechanical remote control assembly - Concept
M-FS-16249 B70-10144 07
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06
Bileaf mechanical strain gage
ARC-10303 B72-10197 07

Thermocouple tape
LEWIS-11072 B72-10515 04
Self-deploying boom
GSFC-10566 B72-10574 07
Heated bimetal strip prevents damage of bearings by vibration
NPO-11870 B73-10348 06

METAL SURFACES

Surface treatment for valve seats
NPO-10779 B70-10202 08
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Chatter-free check valve - A concept
MSC-13262 B71-10067 07
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Low cost anti-galling bushings
LEWIS-11724 B72-10359 08
Surface roughness measured by optical signatures
ARC-10853 B74-10118 03

METAL VAPORS

Vapor feeding of liquid metal cathodes
HQ-10213 B70-10168 03
Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
Variables in turbine erosion
M-FS-18677 B70-10325 03
Improved linings for integrating spheres
MSC-12237 B70-10413 03
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04

METAL WORKING

Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05
Densification of powder metallurgy billets by a roll consolidation technique
LEWIS-11395 B73-10040 08
Autoclave heat treatment for prealloyed powder products
LEWIS-11953 B73-10172 04
Mechanical rod peening
M-FS-23047 B74-10237 07
Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 B75-10246 04
Influence of heat treatment on mechanical properties of 300M steel
MSC-14792 B75-10271 04

METAL-GAS SYSTEMS

Use of thermodynamic properties of metal-gas systems as low-pressure standards
LANGLEY-10452 B70-10223 03

METAL-METAL BONDING

Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 B70-10194 08
Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08

- Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08
Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08
Portable electron beam weld chamber
MSC-17738 B72-10338 06
Metal-metal reinforced laminar composites
LEWIS-11790 B73-10068 04
New explosive seam welding concepts
LANGLEY-11211 B73-10180 04
Bonded panel, flaw detection standards
LANGLEY-11399 B73-10240 06
Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04
Inhibiting Kirkendall void growth in welded bimetallic structures
LEWIS-11573 B75-10006 08
Solar-cell interconnects
M-FS-23257 B75-10231 04
- METALLIZING**
Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01
Topological solution of bilateral switching networks
ARC-10294 B72-10055 01
Prevention of cathode damage from positive ion bombardment
HQ-10688 B72-10654 03
Metallized polymeric foam material
ARC-10860 B74-10218 04
- METALLOGRAPHY**
Holographic stress analysis
M-FS-20687 B70-10123 01
Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08
Accurate reassembly of small broken test specimens
M-FS-16730 B70-10455 07
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
Composite casting demonstration
M-FS-21668 B72-10266 04
Video enhancement of X-ray and neutron radiographs
LEWIS-11944 B73-10009 03
- METALLURGY**
Directionally solidified superalloy
HQ-10522 B70-10058 04
Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 B70-10396 04
- Method of joining metals of significantly different expansion rates
NPO-12076 B71-10028 08
Producing graphite with desired properties
NUC-11001 B71-10042 04
Accurate pointing of tungsten welding electrodes
ARG-10449 B71-10048 08
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
Electron beam chemistry produces high purity metals
LEWIS-11639 B72-10439 04
Materials data handbook on titanium 6Al-4V
M-FS-22796 B73-10372 04
Materials data handbooks on aluminum alloys
M-FS-22798 B73-10373 04
Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04
Welding high-strength aluminum alloys
M-FS-22918 B73-10481 04
- METALS**
Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05
Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Improved welding of Rene-41
M-FS-18821 B70-10367 08
Metal detector system
ARC-10265 B70-10511 01
Nondestructive spot tests allow rapid identification of metals
LANGLEY-10539 B70-10520 04
Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04
Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04
Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04
Hydrogen-environment embrittlement of metals: A study
M-FS-22540 B73-10168 04
- METASTABLE ATOMS**
Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
- METASTABLE STATE**
Superconductor transition temperatures study
M-FS-21247 B71-10385 03
- METEOROID PROTECTION**
Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09
Velocity accelerator for particles
NPO-11349 B72-10082 03
- METEOROIDS**
Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
- METEOROLOGICAL FLIGHT**
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
- METEOROLOGICAL PARAMETERS**
Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 B72-10665 03
Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09
Handbook for estimating toxic fuel hazards
M-FS-21114 B75-10198 04
- METEOROLOGY**
Improved heat shield/radiator
NPO-11105 B70-10318 03
Very low velocity flow sensor uses fluidic techniques
ERC-10404 B70-10461 03
Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03
Tornado detector and alarm
M-FS-20915 B72-10106 01
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03
Quartz crystal microbalances to measure wind velocity and air humidity
NPO-13462 B75-10124 03
- METHANE**
Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
Low temperature fluid blender
LEWIS-11206 B71-10058 04
Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Isotropic pyrolytic carbons
ARC-10532 B72-10029 04
Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03
Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
LEWIS-11574 B72-10330 06
Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04

METHODOLOGY

- Fabrication of cooled, graphite-lined structures
LEWIS-11741 872-10593 08
Internal capillary insulation for cryogenic tanks
LEWIS-11234 872-10626 06
Continuous catalytic decomposition of methane
ARC-10339 873-10016 03

METHODOLOGY

- Induction brazing manual
M-FS-14924 871-10123 08
Improved procedures for mass matrix-reductions in eigenvalue solutions
NPO-11619 873-10384 09

METHYL ALCOHOLS

- Colloid technique of mirror cleaning
LANGLEY-10675 870-10463 04
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 871-10103 06
Stabilization of lactate dehydrogenase
ARC-10415 872-10062 05
Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
LANGLEY-10940 872-10115 04
Restartable heat pipe
ARC-10198 872-10188 03
A methanol/air fuel cell system
M-FS-22541 873-10472 07
Soil moisture by extraction and gas chromatography
ARC-10748 873-10503 04

METHYL CHLORIDE

- Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 872-10419 04

METHYL COMPOUNDS

- Multilayer screen gives cathode ray tube high contrast
ERC-10217 870-10454 01
Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 870-10645 04
Erasable holographic medium using cis-trans isomerization
M-FS-22062 872-10720 03

METHYLENE

- Statistical characterization of phenolic-novolac structures
ARC-10393 871-10255 04

METHYLENE BLUE

- Oxygen sensitive paper
M-FS-22354 873-10103 04
Calibration of dissolved oxygen standard for analysis with methylene blue
M-FS-22353 873-10147 04

METHYLHYDRAZINE

- Updated, expanded, fluid properties handbook
M-FS-21169 871-10078 04

METRIC PHOTOGRAPHY

- Laser altimeter
M-FS-13691 870-10196 02

MICA

- Contact material for pressure-sintering ferrites
ERC-10213 870-10380 01
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 871-10077 04

MICE

- A magnetic mouse activity meter
HQ-10664 872-10482 05

- Ultrastructural alteration of mouse lung by prolonged exposure to mixtures of helium and oxygen
ARC-10929 875-10061 05

MICHELSON INTERFEROMETERS

- Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 871-10232 03
Multispectral infrared imaging interferometer
MSC-12404 871-10325 02
Vibration testing and analysis using holography
M-FS-21050 871-10352 03
Experimental study of surface cracks
MSC-14032 872-10019 04
Liquid-helium-cooled Michelson interferometer
ARC-10554 872-10217 03
Combined effects of a converging beam of light and mirror misalignment in Michelson interferometry
ARC-10889 874-10246 03

MICHIGAN

- Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 870-10177 04

MICROANALYSIS

- Combination syringe provides air-free blood samples
MSC-12320 870-10545 05
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 870-10674 04
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 871-10099 04
Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 872-10207 03

MICROBALANCES

- Microbalance accurately measures extremely small masses
HQ-09962 870-10607 01
Thermoelectrically-cooled quartz microbalance
M-FS-23101 875-10076 04
Quartz crystal microbalances to measure wind velocity and air humidity
NPO-13462 875-10124 03

MICROBIOLOGY

- Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 870-10001 05
Biological handbook for engineers
M-FS-20349 870-10255 05
Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 870-10525 05
Miniature grinder for solid specimens
M-FS-20005 871-10059 05
Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 871-10475 05
Reusable anaerobic system for microbiological studies - A concept
MSC-13920 871-10495 05
Microbiological surface sampling cart
LANGLEY-11069 872-10395 05
Metered oxygen supply aids treatment of domestic sewage
ARC-10024 872-10557 05
Automatic agar tray inoculation device
LANGLEY-11074 872-10637 05

SUBJECT INDEX

- Biodetection grinder
M-FS-22833 873-10474 05
Ionene treatment of surfaces stimulates cell growth
NPO-13421 875-10121 04
Microbial load monitor
MSC-14062 875-10167 05
Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 875-10170 05
Rapid method for determination of antimicrobial susceptibilities pattern of urinary bacteria
GSFC-12039 875-10253 05
- MICROCRACKS**
Laser scribing of silicon wafers
ERC-10386 870-10437 01
Ion plating seals microcracks or porous metal components
LEWIS-11657 872-10397 04
- MICROELECTRONICS**
Data acquisition from high-speed rotating shafts
LEWIS-10886 870-10043 01
Low power NAND gate
M-FS-14487 870-10203 01
A miniature 1/4-inch diameter 24-pin plug and receptacle
LANGLEY-10607 870-10249 01
Temperature-independent resistor for microelectronic circuits
HQ-10382 870-10276 01
Laser scribing of silicon wafers
ERC-10386 870-10437 01
Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 870-10447 05
Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 870-10515 01
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 870-10687 01
Radiographic inspection specifications for electronic components
M-FS-20723 871-10438 01
Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 871-10452 01
Guidelines for fabrication of hybrid microcircuits
M-FS-21964 872-10393 01
Specification guidelines for hybrid microcircuits
M-FS-22090 872-10474 01
Dual field alignment display and control for electron micropattern generator
M-FS-22118 872-10646 01
Insulated-gate field-effect transistor strain sensor
LANGLEY-11012 872-10731 01
A new packaging and testing concept for microelectronic components
M-FS-20936 873-10109 01
Active tuning circuit
GSFC-11340 873-10334 02
High voltage solid-state relay
LEWIS-12096 874-10006 01
Microelectronics packaging technique: A Concept
MSC-19399 874-10192 01
High-performance Schottky diodes endure high temperatures
M-FS-23184 875-10101 01

- Integrated-circuit balanced parametric amplifier
M-FS-23193 B75-10102 01
Microelectronic fabrication of superconducting devices and circuits
NPO-13419 B75-10120 01
Microcircuit testing and fabrication, using scanning electron microscopes
M-FS-23159 B75-10304 01
- MICROFIBERS**
New type of nonflammable paper
MSC-13432 B70-10546 04
- MICROFILMS**
Cost-reducing multipurpose microfilm card
KSC-10508 B70-10071 03
Slide checkout console
MSC-12318 B70-10290 02
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
Solid-state data interpretation system - A concept
M-FS-20587 B71-10366 02
Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09
- MICROHARDNESS**
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04
- MICROMETEORIODS**
Micrometeoroid velocity-and-trajectory analyzer
GSFC-11889 B74-10286 01
Micrometeoroid composition analyzer
GSFC-11892 B74-10287 01
- MICROMETERS**
Universal router concept
M-FS-20756 B70-10313 07
Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07
Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
Traveling digital counters for micrometers
LANGLEY-11258 B73-10042 06
- MICROMINIATURIZATION**
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
Heart catheter cable and connector
ARC-10406 B72-10200 05
Microminiature gas chromatographic column
ARC-10594 B72-10306 04
- Guidelines for fabrication of hybrid microcircuits
M-FS-21964 B72-10393 01
Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02
- MICROMINIATURIZED ELECTRONIC DEVICES**
Microminiaturized, biopotential conditioning system (MBCS)
JSC-14180 B73-10236 02
Improved multiple-target sputtering equipment
NPO-13345 B75-10178 04
Quality control of microelectronic wire bonds
M-FS-23327 B75-10312 01
- MICROORGANISMS**
A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05
Biological handbook for engineers
M-FS-20349 B70-10255 05
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
Scintillation detector for carbon-14
ARC-10378 B71-10144 03
Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05
Microbial burden prediction model program
NPO-11709 B71-10401 09
Microorganism sample device
LANGLEY-10258 B71-10487 05
Microbiological surface sampling cart
LANGLEY-11069 B72-10395 05
Metered oxygen supply aids treatment of domestic sewage
ARC-10024 B72-10557 05
Automatic microbial transfer
LANGLEY-11354 B73-10229 05
Measuring micro-organism gas production
LANGLEY-11326 B73-10241 05
Detecting and measuring metabolic byproducts by electrochemical sensing
LANGLEY-11525 B73-10523 05
Micro-organism distribution sampling for bioassays
LANGLEY-10789 B74-10289 05
Microbial load monitor
MSC-14062 B75-10167 05
Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 B75-10170 05
- MICROPARTICLES**
Analysis of microsize particulates
ARC-10647 B72-10565 04
- MICROPHONES**
Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
Piezoelectric transducer
HQ-10548 B70-10157 01
Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 B70-10335 01
Intruder detection system
ARC-10097 B70-10638 02
Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 B70-10690 03
- Biomedical recording system
MSC-13653 B70-10697 05
Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06
Position indicating, rotating boom
LANGLEY-11202 B72-10066 07
Blood pressure measurement and display system
MSC-13036 B72-10334 05
Porous surface microphone for measuring acoustic signals in turbulent windstreams
ARC-10776 B73-10490 03
Portable headset microphone checker
KSC-10699 B75-10254 02
- MICROPOROSITY**
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
- MICROPROGRAMMING**
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09
Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
- MICROROCKET ENGINES**
Final report on a study of low-density nozzle flows, with application to microthrust rockets
HQ-10761 B72-10748 06
- MICROSCOPES**
Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08
Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
Absolute focus lock for microscopes
LANGLEY-10184 B70-10728 07
Automatic cross-sectioning and monitoring system locates defects in electronic devices
GSFC-11221 B71-10221 01
Time-lapse camera for microscopy
ARC-10423 B72-10125 05
- MICROSCOPY**
Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 B71-10022 03
Producing graphite with desired properties
NUC-11001 B71-10042 04
Measuring internal dimensions of small transparent objects
LANGLEY-10712 B71-10505 08
Hand-held photomicroscopy system
ARC-10468 B72-10190 03

MICROSTRUCTURE

- Silver stain for electron microscopy
ARC-10661 B72-10415 05
Improved technique for inspection of planar surfaces by microscopy and interferometry
NPO-11893 B73-10143 03
- MICROSTRUCTURE**
Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04
Advanced alloy design technique: High temperature cobalt base superalloy
LEWIS-10436 B72-10514 04
Joining porous components to solid metal structures
LEWIS-11259 B72-10754 08
- MICROTHRUST**
Final report on a study of low-density nozzle flows, with application to microthrust rockets
HQ-10761 B72-10748 06
- MICROWAVE AMPLIFIERS**
Varactor diode assembly with low parasitic reactances
GSFC-11617 B75-10031 01
Microwave diode amplifiers with low intermodulation distortion
GSFC-11668 B75-10213 01
- MICROWAVE ANTENNAS**
Economical weatherproof helical antenna
XKS-08485 B70-10016 01
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
Microstrip antennas
LANGLEY-11284 B73-10179 01
High-gain antenna with singly-curved reflector
NPO-11361 B73-10291 02
Multiple-reflection conical microwave antenna
NPO-11661 B73-10299 02
High-accuracy programable square-law detector system
NPO-13525 B75-10240 02
- MICROWAVE ATTENUATION**
Microwave emission from granular silicates
NPO-11702 B73-10140 03
- MICROWAVE CIRCUITS**
Solid state variable time delay
ERC-10032 B70-10492 01
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
Technique for refocusing, decompressing, and conditioning spent electron beams
LEWIS-11617 B72-10727 03
High q band-pass resonators utilizing composite band-stop resonator pairs
GSFC-10990 B74-10035 02
- MICROWAVE EMISSION**
Technique for refocusing, decompressing, and conditioning spent electron beams
LEWIS-11617 B72-10727 03
- MICROWAVE EQUIPMENT**
Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02

- A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01
Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
Microwave dosimeter - A concept
HQ-10407 B71-10075 01
The thin film microwave iris
LANGLEY-10511 B72-10548 02
Design of microstrip components by computer
LANGLEY-11210 B72-10741 01
Low-noise microwave polarimeter
NPO-11512 B73-10134 02
- MICROWAVE FILTERS**
Extended range harmonic filter
LEWIS-12064 B73-10313 02
- MICROWAVE FREQUENCIES**
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Radiometric evaluation of antenna-feed component losses
NPO-11238 B70-10344 02
Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease
ERC-90066 B70-10376 01
Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
M-FS-21924 B72-10316 01
The thin film microwave iris
LANGLEY-10511 B72-10548 02
New pulsing technique may improve radar ranging systems
ARC-10600 B72-10564 02
Technique for refocusing, decompressing, and conditioning spent electron beams
LEWIS-11617 B72-10727 03
- MICROWAVE HOLOGRAPHY**
Image formation in microwave holography
ARC-10773 B73-10378 03
Microwave holography for nondestructive testing
ARC-10774 B73-10379 03
- MICROWAVE IMAGERY**
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
- MICROWAVE PROBES**
A vacuum chamber feedthrough
M-FS-21133 B73-10152 01
- MICROWAVE RADIOMETERS**
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
Improved noise-adding radiometer for microwave receivers
NPO-11706 B73-10345 02

SUBJECT INDEX

- MICROWAVE RESONANCE**
New pulsing technique may improve radar ranging systems
ARC-10600 B72-10564 02
- MICROWAVE SCATTERING**
Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
- MICROWAVE SENSORS**
Pocket-size microwave radiation hazard detector
NPO-11461 B74-10097 02
- MICROWAVE SPECTRA**
Formaldehyde monitor for automobile exhausts
LANGLEY-11352 B73-10228 04
- MICROWAVE SWITCHING**
Interferometer using RF switching matrix
GSFC-11051 B72-10462 01
Transmitter switch for high-power microwave output
NPO-13439 B75-10122 02
- MICROWAVE TRANSMISSION**
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02
Transmission line for S-band masers
NPO-13504 B75-10126 03
- MICROWAVE TUBES**
High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
LEWIS-11610 B73-10206 03
- MICROWAVES**
Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
Hermetic-coaxial package design for microwave transistors
GSFC-10791 B73-10427 01
- MIGRATION**
Preventing oil migration in vacuum systems
GSFC-11253 B72-10129 04
- MILITARY TECHNOLOGY**
Flat conductor cable handbook
M-FS-21009 B71-10379 01
Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
- MILLIMETER WAVES**
Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01
Millimeter-wave antenna system
GSFC-10949 B73-10333 01
Superconducting quantum-interference devices
M-FS-23163 B75-10097 03
- MILLING (MACHINING)**
Hobel stripper for shielded and unshielded flat conductor cable
M-FS-20120 B71-10060 08
Refrigerated cutting tools improve machining of superalloys
LANGLEY-10488 B71-10076 08
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04

SUBJECT INDEX

Twistable mold for helicopter blades
ARC-10682 B72-10432 08

MINERAL DEPOSITS
Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
Improved diamond coring bits developed for dry and chip-flush drilling
M-FS-21111 B71-10358 07

MINERAL OILS
Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04

MINERALOGY
Mechanical sieve for screening mineral samples
HQ-10242 B70-10083 04
Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
Gravitational gradiometer measures mass changes
M-FS-20814 B72-10140 03

MINERALS
Metabolic balance analysis program
M-FS-21237 B71-10384 09
Determination of bone mineral mass in vivo
MSC-14276 B75-10168 05

MINES (EXCAVATIONS)
Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04

MINIATURE ELECTRONIC EQUIPMENT
Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
A miniature 1/4-inch diameter 24-pin plug and receptacle
LANGLEY-10607 B70-10249 01
Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
Advances in electrometer vacuum tube design
GSFC-10729 B70-10696 01
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05
Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 B72-10053 03
Narrowband, crystal-controlled biomedical telemetry system
ARC-10708 B72-10255 01
An ingestible temperature-transmitter
ARC-10583 B72-10275 01
Nonsteady flow-direction measurement
LEWIS-11499 B72-10403 06
Integrated structure vacuum tube: A Concept
ARC-10445 B74-10110 01
Miniature sonar fish tag
LANGLEY-11814 B75-10092 02
Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 B75-10145 08

Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 B75-10195 01
Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 B75-10196 01

MINIATURIZATION
Miniature spray-painting booth
MSC-15811 B70-10549 03
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
Miniature multicontact connectors
LANGLEY-10740 B70-10724 01
Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
Miniaturized haploscope for testing binocular vision
ARC-10759 B73-10492 05

MINICOMPUTERS
Minicomputer-controlled frequency generator
NPO-11962 B74-10163 02
Advanced-priority interrupt module
NPO-13067 B74-10165 02
Programed asynchronous serial data interrogation in a two-computer system
GSFC-11778 B75-10184 02
Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
MSC-14866 B75-10236 03

MINIMA
Minimization search method for data inversion
NPO-99999 B75-10338 09

MINIMUM VARIANCE ORBIT DETERMINATION
Validity test for linear error analysis
JSC-14378 B73-10219 09

MINING
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

MIRRORS
Holographic stress analysis
M-FS-20687 B70-10123 01
Noncontacting-optical-strain device
NPO-10778 B70-10292 03
Holographic photography of high velocity particles
ERC-10318 B70-10371 03
Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
Improved photoionization mass spectrometer
LANGLEY-10180 B70-10402 04
Multipass holographic interferometer improves image resolution
HQ-10499 B70-10426 03
Accurate reassembly of small broken test specimens
M-FS-16730 B70-10455 07
Collodion technique of mirror cleaning
LANGLEY-10675 B70-10463 04
Laser wavelength selector and output coupler
ERC-10248 B70-10507 02
Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 B70-10568 05
Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03

MIRRORS

Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
Ultraviolet interferometer
HQ-10546 B71-10026 03
A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03
Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03
Radiant energy absorption enhancement in optical imaging systems
ARC-10194 B71-10112 03
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 B71-10232 03
Laser vibration analyzer
XAC-01670 B71-10249 03
Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07
Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03
Conical electromagnetic radiation flux concentrator
M-FS-21613 B72-10147 03
Particle detection by a light-scattering technique
ARC-10384 B72-10160 03
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Solar sensor with autocollimator
ARC-10148 B72-10192 03
Bileaf mechanical strain gage
ARC-10303 B72-10197 07
Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 B72-10209 03
Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03
Scanning technique for tracking small eye-movements
ARC-10488 B72-10220 05
Laser frequency modulation with electron plasma
AEC-10079 B72-10373 03
An improved apochromatic wedge utilizing optical molecular contact bonding
GSFC-11082 B72-10388 03
A new low-cost method for producing collimating mirrors
LEWIS-11553 B72-10513 08
Particle detection with intensified laser beam
HQ-10645 B72-10516 03
An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03

MIS (SEMICONDUCTORS)

SUBJECT INDEX

Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04
Real time optical figure sensor
M-FS-22123 B73-10169 02
Inexpensive lightweight mirror
MSC-14615 B74-10155 05
Combined effects of a converging beam of light and mirror misalignment in Michelson interferometry
ARC-10889 B74-10246 03
General optics evaluation program (GENOPTICS)
GSFC-12038 B75-10294 09

MIS (SEMICONDUCTORS)
A voltage-tunable three-terminal Gunn device
HQ-10783 B72-10518 01
Development of chip passivated monolithic complementary MISFET circuits with beam leads
M-FS-22264 B72-10696 01

MISALIGNMENT
Mechanical characteristics of the Bossler coupling
HQ-10508 B70-10072 07
Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07
Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
Combined effects of a converging beam of light and mirror misalignment in Michelson interferometry
ARC-10889 B74-10246 03

MISSILE COMPONENTS
Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

MISSILE CONFIGURATIONS
Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

MISSILE DESIGN
Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

MISSILES
Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09

MISSION PLANNING
Reliability Analysis Model
M-FS-14513 B70-10614 09
System/360 Computer Assisted Network Scheduling (CANS) System
GSFC-10909 B72-10599 09

MIXERS
Self-powered mixer for pressurized containers
LEWIS-12054 B73-10312 03

MIXING
Fluid mixing technique increases the gain and output power of carbon dioxide laser systems
HQ-10389 B70-10108 03
Liquid level sensor
M-FS-16648 B70-10219 01
Experimental verification of computer spray-combustion models
ARC-10689 B73-10031 03

MIXING CIRCUITS
High-resolution spectral analysis
NPO-10748 B70-10039 01

Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
Signal to noise measurement circuit
GSFC-11239 B72-10102 01
Active tuning circuit
GSFC-11340 B73-10334 02

MIXTURES
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Computer program for calculation of thermodynamic and transport properties of complex chemical systems
LEWIS-11997 B73-10231 09
Electrophoresis separator combining centrifugal separation
M-FS-21396 B73-10328 04

MOBILITY
Improved electron-beam welding technique
M-FS-20714 B70-10127 08
Microbiological surface sampling cart
LANGLEY-11069 B72-10395 05
Proposed semiconductor film improvement
HQ-10685 B72-10438 04
Triangular wheel locomotion mechanism
NPO-11366 B72-10714 06

MODAL RESPONSE
Nonlinear damping in structures
M-FS-20701 B70-10341 03
Tracking antenna deformation program
GSFC-11191 B71-10017 09
Frame modal analysis
MSC-17562 B71-10414 09
Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
Improved procedures for mass matrix-reductions in eigenvalue solutions
NPO-11619 B73-10384 09
Frequencies and modes for shells of revolution (FAMSOR)
JSC-14497 B73-10444 09

MODELS
Controlled release of free-falling test models
NPO-11314 B70-10077 07
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05
Coercive force of thin magnetic films
NPO-10750 B70-10221 03
Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
New model performance index for engineering design of control systems
HQ-10520 B70-10293 06
Nonlinear damping in structures
M-FS-20701 B70-10341 03
Thin film devices used as oxygen partial pressure sensors
XLA-06473 B70-10419 04
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
Thermal and structural modeling of superinsulation
M-FS-20324 B71-10019 02

Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01
Information quality-control model
NPO-11431 B71-10281 06
Determination of radiation interchange factors
MSC-13475 B71-10295 09
Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06
Urban air pollution dispersion model
AEC-10004 B72-10003 03
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09
Three-dimensional models aid visualization of engineering drawings
NPO-13394 B75-10179 08

MODES
Null type instrument for simplifying two dimensional field plotting
XLA-08493 B70-10192 01
Radiometric evaluation of antenna-feed component losses
NPO-11238 B70-10344 02
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01

MODES (STANDING WAVES)
Vibration detection using lasers
ARC-10389 B71-10145 03
Vibration testing and analysis using holography
M-FS-21050 B71-10352 03

MODULATION
Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
Signal phase switches offer greater dynamic range
NPO-10709 B70-10393 01
Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01
New filter technique improves home television reception
MSC-13729 B71-10141 02
Laser vibration analyzer
XAC-01670 B71-10249 03
Waveshaping electronic circuit
M-FS-14916 B71-10429 01
Planet geometric center tracker
ARC-10084 B71-10445 02
Accurate measurement of telemetry performance
NPO-11457 B72-10089 02
Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07

SUBJECT INDEX

Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Stabilizing a gaseous optical laser
XGS-03644 B73-10517 03
Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 B74-10209 01

MODULATORS

A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02
Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01
Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
Dually-mode-locked ND: YAG laser
GSFC-11746 B74-10038 03

MODULES

Array multiplier
ERC-90076 B70-10047 02
Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Multimode ergometer system
M-FS-21044 B71-10107 05
Water electrolysis module
ARC-10246 B71-10203 03
Stored program concept for analog computers
M-FS-20874 B71-10240 09
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
Instrument detects bacterial life forms
GSFC-10972 B71-10312 05
Modular construction provides large volume storage facility in minimum space
M-FS-13568 B71-10354 08
Interconnections for fluidic circuits
ARC-10481 B72-10164 02
Nondestructive leak testing
LANGLEY-11561 B73-10464 06
Modular support blocks for fluid lines
MSC-19335 B74-10023 07

MODULUS OF ELASTICITY

Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 B70-10394 06
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 B70-10432 04
Promising boron/graphite/resin composites
M-FS-21126 B71-10217 04
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
Beryllium thin films for resistor applications
ARC-10485 B72-10021 01

Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04
High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04
A monostrain test apparatus
M-FS-24221 B72-10679 06
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01

MOIRE EFFECTS

Measuring the conductor spacing in flat conductor cables
M-FS-20560 B70-10015 08

MOISTURE

Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
Psychrometric chart for physiological research
ARC-10394 B71-10470 03

MOISTURE CONTENT

Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05
Remote measurement of the water content of snowpacks
ARC-10651 B72-10567 03
Effect of the method of process on the control of microbial growth by water activity in foods
MSC-14234 B72-10732 05
Soil moisture by extraction and gas chromatography
ARC-10748 B73-10503 04
Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
Control of nonenzymatic browning in intermediate-moisture foods
MSC-14835 B75-10317 05

MOLD

Microflora in soils of desert regions
NPO-11215 B70-10253 05

MOLDING MATERIALS

Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04
Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
High strength, medium density molded foam
AEC-10053 B72-10235 04

MOLECULAR OSCILLATIONS

New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
Improved mold release for filled-silicone compounds
JSC-19300 B73-10338 04
Cushion module for stowing electronic equipment
ARC-10779 B74-10073 04
Cryogenic line insulation made from prefabricated polyurethane shells
MSC-19523 B75-10110 06

MOLDS

Use of acrylic sheet molds for elastomeric products
MSC-15636 B70-10019 08
A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 B70-10273 04
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
Strong, easy-to-mold, spiral buttress thread
LANGLEY-10755 B71-10336 08
New materials for fireplace logs
M-FS-21363 B71-10339 04
Sprue cutoff tool for molded FCC plugs
M-FS-20236 B71-10421 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Twistable mold for helicopter blades
ARC-10682 B72-10432 08
Improved mold release for filled-silicone compounds
JSC-19300 B73-10338 04
Inexpensive lightweight mirror
MSC-14615 B74-10155 05
Dip molding to form intricately-shaped medical elastomer devices
NPO-13535 B75-10238 08
Lightweight orthotic braces
LANGLEY-11894 B75-10303 05

MOLECULAR ABSORPTION

Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03

MOLECULAR CHAINS

Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04

MOLECULAR FLOW

Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03
Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04

MOLECULAR INTERACTIONS

A low-altitude satellite interaction study
GSFC-11384 B71-10499 09

MOLECULAR OSCILLATIONS

Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 B70-10441 03

MOLECULAR SPECTROSCOPY

MOLECULAR SPECTROSCOPY

Infrared tunable laser: A concept
ARC-10463 B75-10081 03

MOLECULAR STRUCTURE

Low-void polyimide resins for autoclave processing
LEWIS-11665 B72-10728 04
TLC determination of functionality in prepolymers
NPO-11731 B73-10037 04

MOLECULAR WEIGHT

Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
Rapid analytical determination of glutaraldehyde concentrations
ARG-10413 B71-10047 05
Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
Statistical characterization of phenolic-novolac structures
ARC-10393 B71-10255 04
Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 B71-10291 04
Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04

MOLECULES

Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03

MOLLIER DIAGRAM

A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09

MOLTEN SALT ELECTROLYTES

Al/C12 molten salt battery
HQ-10696 B72-10527 01

MOLYBDATES

Advances in electrometer vacuum tube design
GSFC-10729 B70-10696 01

MOLYBDENUM

Vibration damping of mechanical seals
M-FS-14160 B70-10068 07
Investigation of positive shaft seals
M-FS-18589 B70-10176 07
An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01
High temperature ion source
ERC-10197 B70-10379 03

Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01

High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08

Glass-to-metal bonding process improves stability and performance of semiconductor devices
ERC-10264 B70-10477 01

Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08

Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03

Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03

Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08

High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07

Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04

High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04

MOLYBDENUM ALLOYS

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04
Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04
Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04

MOLYBDENUM COMPOUNDS

Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

MOLYBDENUM DISULFIDES

Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 B70-10395 06
Resistivity and Hall measurements of thermoelectric materials
M-FS-20470 B71-10015 03
Inorganic glass ceramic slip rings
M-FS-20711 B72-10313 04
Research on bearing lubricants for use in a high vacuum
M-FS-22119 B72-10469 04

MOLYBDENUM OXIDES

Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03

MOMENTS

Mechanical characteristics of the Bossler coupling
HQ-10508 B70-10072 07
Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09

Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02
A real-time statistical time-series analyzer
MSC-12428 B71-10276 02

MOMENTS OF INERTIA

Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
Accumulative weights program
M-FS-15066 B71-10181 09
Rotordynamic response analysis program
HQ-10579 B71-10211 09

MOMENTUM

Spray momentum measuring system
MSC-12305 B71-10137 05
Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09

MOMENTUM TRANSFER

Hermetically sealed motion transmitter
MSC-17348 B71-10328 07

MONEL (TRADEMARK)

Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08
Monel-shot and screen regenerators
GSFC-11593 B73-10462 03

MONITORS

Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
Solenoid valve performance characteristics studied
M-FS-12458 B70-10066 07
Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
Electronic sleep analyzer
MSC-13282 B70-10110 02
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
Economic gas chromatograph system for subambient pressure gas sampling
M-FS-16298 B70-10220 02
Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 B70-10230 09
Very high frequency digital rangine system
MSC-15763 B70-10284 02
Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 B70-10515 01
Ground computer test trap
KSC-10574 B70-10561 09
Dual-wavelength system monitors deposition of films - A concept
M-FS-20675 B70-10658 03
Diagnostic capability added to digital events evaluator
KSC-10526 B71-10001 02
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
Kaleidoscopic light feedback for television systems
MSC-12386 B71-10068 03
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01

SUBJECT INDEX

SUBJECT INDEX

Automatic cross-sectioning and monitoring system locates defects in electronic devices
 GSFC-11221 B71-10221 01

Automatic transmission line monitor
 KSC-10385 B71-10288 02

Data sampling system for monitor and control station
 M-FS-20948 B71-10299 02

A system for the automatic measurement and digital display of systolic and diastolic blood pressures
 MSC-13227 B71-10329 05

Remote control radioactive-waste removal system uses modulated laser transmitter
 LANGLEY-10311 B71-10343 03

Study-simulation of space station dynamics
 M-FS-21227 B71-10382 09

Television multiplexing system
 KSC-10654 B71-10391 02

Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03

Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01

Programmed multiplexing system simultaneously monitors several voltages
 MSC-17139 B71-10517 02

Software control for large scale on-board checkout: A concept
 MSC-13977 B72-10015 09

Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03

Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02

Solar sensor with autocollimator
 ARC-10148 B72-10192 03

Simple dynamic electromagnetic radiation detector
 LEWIS-11159 B72-10227 03

Filter cassette for high volume air sampler
 LEWIS-11469 B72-10379 03

Roll function in a flight simulator
 ARC-10557 B72-10417 02

Acoustic emission used as weld quality monitor
 AEC-10018 B72-10427 08

An absentee monitoring device
 KSC-10668 B72-10578 01

Acoustical analysis system
 GSFC-11087 B72-10751 02

Flexible electroencephalogram (EEG) headband
 LANGLEY-10927 B73-10048 05

Optical monitoring system
 M-FS-21692 B73-10050 03

Monitor for physical property changes in solid propellants
 ARC-10702 B73-10130 03

Time-based priority selection for analog circuits
 M-FS-24242 B73-10154 02

An inexpensive vehicle speed detector
 M-FS-22601 B73-10157 02

Bipotential monitoring with inexpensive office-type cassette recorders
 M-FS-22566 B73-10167 02

Real time statistical analysis of acoustic emission signals for flaw monitoring systems
 M-FS-24402 B73-10212 03

Bacterial contamination monitor
 GSFC-10879 B73-10222 05

Formaldehyde monitor for automobile exhausts
 LANGLEY-11352 B73-10228 04

Microminiaturized, biopotential conditioning system (MBCS)
 JSC-14180 B73-10236 02

Electro-optical device for monitoring wire size
 LANGLEY-11358 B73-10321 02

Acoustic-emission signal-processing analog unit for locating flaws in large tanks
 M-FS-24424 B73-10325 06

Safety monitoring system for radioisotope thermoelectric generators
 NPO-13285 B73-10352 02

Particulate and aerosol detector
 LANGLEY-11434 B73-10357 04

Pulse stretcher for narrow pulses
 JSC-14130 B73-10365 02

Vectorcardiogram
 JSC-14427 B73-10401 02

Sequential-strip and sequential-disk filters
 JSC-14592 B73-10430 06

Pseudotachometer for mobile metabolic analyzer
 M-FS-22909 B73-10480 02

Rechargeable, silver-zinc battery conditioner/monitor unit and state-of-charge indicator
 M-FS-22835 B73-10486 02

Computer system for monitoring radiorepirometry data
 ARC-10784 B73-10494 05

Isolated transfer of analog signals
 LANGLEY-11312 B73-10513 02

Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
 M-FS-22678 B73-10518 06

Detecting and measuring metabolic byproducts by electrochemical sensing
 LANGLEY-11525 B73-10523 05

Microelectronics packaging technique: A Concept
 MSC-19399 B74-10192 01

Carbon monoxide detector
 M-FS-23090 B74-10268 04

Location of vehicles using AM station broadcasting signals
 NPO-13217 B74-10300 02

High-speed data word monitor
 ARC-10899 B75-10129 02

Digital tape drive monitor
 GSFC-11925 B75-10153 02

Voltage monitoring system
 KSC-10736 B75-10154 02

Video switcher for coupling video cameras to single TV monitor
 KSC-10782 B75-10192 02

Monitor for checking electric-field meters
 KSC-10851 B75-10296 02

MONOCHROMATIC RADIATION

Electron energy analyzer
 HQ-10373 B70-10138 02

Laser-Doppler gas velocimeter
 M-FS-20583 B70-10143 02

Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 B71-10232 03

MONOPROPELLANTS

Variable ratio beam splitter for laser applications
 ARC-10391 B71-10265 03

Spectrometer
 GSFC-11694 B74-10181 03

MONOCHROMATIZATION

Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03

MONOCHROMATORS

Photoionization mass spectrometer
 HQ-10167 B70-10113 03

Improved photoionization mass spectrometer
 LANGLEY-10180 B70-10402 04

Rotary shutter mechanism contains optical elements
 GSFC-11244 B72-10387 03

An improved apochromatic wedge utilizing optical molecular contact bonding
 GSFC-11082 B72-10388 03

Helium window for shock-tube monochromators
 NPO-11852 B72-10556 03

Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
 LEWIS-12445 B75-10152 02

MONOCOQUE STRUCTURES

New structural approach for determining load carrying capability of filament wound composite materials
 M-FS-15121 B70-10408 06

MONOMERS

Polymerization of perfluorobutadiene
 NPO-10863 B70-10131 04

Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
 NPO-10893 B70-10334 04

Process for synthesizing a new series of fluorocarbon polymers
 NPO-10862 B70-10453 04

Soluble high molecular weight polyimide resins
 LEWIS-11056 B70-10504 04

Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04

Polymer containing functional end groups is base for new polymers
 NPO-10998 B71-10184 04

Statistical characterization of phenolic-novolac structures
 ARC-10393 B71-10255 04

Polymerization of perfluorobutadiene at near-ambient conditions
 NPO-10447 B71-10291 04

Thermally stable polyimides from solutions of monomeric reactants
 LEWIS-11325 B71-10442 04

Polymeric coatings using electronic excitation
 HQ-10698 B72-10257 04

Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
 ARC-10567 B72-10419 04

MONOPROPELLANTS

Propellant-powered actuator for gas generators
 ARC-10484 B72-10008 03

Integrated monopropellant thruster
 NPO-12004 B72-10502 06

MONOPULSE ANTENNAS

Electronic scanning of 2-channel monopulse patterns
GSFC-10299 870-10485 02
Variable-beamwidth antenna without moving parts
GSFC-11924 875-10215 02

MONOPULSE RADAR

Composite antenna feed system operates from VHF to X-band
GSFC-11046 871-10410 02

MONOSTABLE MULTIVIBRATORS

Contourograph display system for monitoring electrocardiograms
MSC-13407 870-10030 05
Signal conditioner circuit for photomultiplier tube
XLA-10773 870-10096 01
Switching circuits with fast response and low power drain
GSFC-10878 870-10250 01
High-accuracy detector for laser radar
MSC-13275 870-10570 01

MONTE CARLO METHOD

The effects of nuclear power generators upon electronic instrumentation
NPO-11217 870-10272 03
Peak structural response to nonstationary random excitations
NPO-11617 871-10188 06
Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 871-10490 09
Automated statistical analysis program (ASAP)
LANGLEY-11125 875-10217 02

MOON

Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 870-10617 02

MOORING

Stable, inflatable life raft for high seas rescue operations
MSC-12393 871-10167 05

MORPHOLOGY

Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 872-10320 04

MOSAICS

Piezoelectric transducer mosaic
ARC-10509 872-10014 01
Solid state television camera has no imaging tube
M-FS-21553 872-10254 02

MOTION PICTURES

Electro-optical time marker for high-speed cameras
KSC-10294 870-10229 01
Reducing streak film data via electronic cross correlator
M-FS-18804 870-10365 01
Vibration testing and analysis using holography
M-FS-21050 871-10352 03
Cine recording ophthalmoscope
ARC-10399 872-10189 05
Hand-held photomicroscopy system
ARC-10468 872-10190 03
Motion compensator for holographic motion picture camera
M-FS-22517 873-10434 03
Photography of random motion with a holographic camera
M-FS-22537 873-10435 03
Optical discriminator system
LANGLEY-11580 874-10139 03

MOTION STABILITY

Hydraulic actuator motion limiter ensures operator safety
ARC-10131 871-10233 07
Suppression of bending motion in elastic bodies
XAC-05632 874-10070 06

MOTIVATION

Motivation techniques for supervision
JSC-19187 873-10448 05

MOTORS

Slow-speed drives for miniature devices
NPO-10700 870-10007 02
Low-cost orbiting grinder for cutting ducts
M-FS-20684 870-10126 07
Fluoric-controller pneumatic stepping motor system
LEWIS-11051 870-10332 02
Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 870-10348 07
High-temperature pump-motor assembly
LEWIS-10256 871-10100 07
Device prepares aluminum surfaces for welding
M-FS-20750 871-10214 07
Automatic cross-sectioning and monitoring system locates defects in electronic devices
GSFC-11221 871-10221 01
Improved orthopedic arm joint
M-FS-21611 871-10485 05
Graph for locked rotor current
MSC-15703 872-10075 06
Mechanical solar motor: A concept
M-FS-23062 874-10292 07

MOUNTING

Cost-reducing multipurpose microfilm card
KSC-10508 870-10071 03
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 870-10289 07
Support for equipment - Quick mounting with quick release
MSC-15874 870-10542 07
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 870-10714 07
Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 871-10044 06
Low-cost quasi-parabolic antenna
LEWIS-11291 871-10121 01
Solar sensor with autocollimator
ARC-10148 872-10192 03
Quick-donning backpack harness
LANGLEY-10102 872-10641 05
Shock and vibration isolation mount for small electronic components
NPO-13253 875-10049 01
Film mounting method for thermomechanical analysis
LANGLEY-11330 875-10072 04
Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 875-10145 08

MTBF
Mathematical techniques for estimating operational readiness of complex systems
MSC-17694 872-10335 09

MUCOUS

Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 871-10051 05

MUFFLERS

Improved method for design of expansion-chamber mufflers with application to operational helicopter
LANGLEY-11548 873-10471 03
Noise suppressor
LANGLEY-11141 874-10261 03

MULTICHANNEL COMMUNICATION

Radio frequency baseband recording technique
HQ-10317 870-10069 02
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 871-10228 02
Circularly-polarized multiband telemetry tracking antenna
NPO-11264 873-10288 02
A 1-1/2-level on-chip-decoding bubble memory chip design
LANGLEY-11766 875-10222 01

MULTILAYER INSULATION

Improved heat-resistant garments
MSC-12109 870-10544 08
Lightweight, self-evacuated insulation panels
LEWIS-90361 870-10646 03
Improved insulating materials effective at extremely high temperatures
NPO-12067 871-10289 04
Granular two-phase insulation systems
NPO-12068 871-10290 04
Thermal scale modeling
M-FS-21268 871-10432 03
Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 872-10154 03
Superior cryogenic insulation developed
M-FS-21560 872-10187 04
Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 872-10406 04
Flexible thermal device
M-FS-21630 872-10612 04

MULTIMODE RESONATORS

One-dimensional multimode and multistate oscillator: A concept
HQ-10851 875-10088 01

MULTIPATH TRANSMISSION

Anti-multipath digital signal detector
LANGLEY-11379 874-10137 02

MULTIPLE OUTPUT PROGRAMS

Topological solution of bilateral switching networks
ARC-10294 872-10055 01

MULTIPLEXING

High-resolution spectral analysis
NPO-10748 870-10039 01
Data acquisition from high-speed rotating shafts
LEWIS-10886 870-10043 01
Radio frequency baseband recording technique
HQ-10317 870-10069 02
Antenna-array, phase quadrature tracking system
MSC-12205 870-10095 02
Constant-amplitude RC oscillator
ARC-10262 870-10338 01
Digital phase-modulation/multiplex system
NPO-11338 870-10355 02

SUBJECT INDEX

Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02

Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02

A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02

A pseudo random-access synchronous meteorological satellite system
GSFC-10895 B71-10220 02

Data sampling system for monitor and control station
M-FS-20948 B71-10299 02

Television multiplexing system
KSC-10654 B71-10391 02

Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 B71-10517 02

Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01

Low distortion automatic phase control circuit
M-FS-21671 B72-10682 02

Insulated-gate field-effect transistor strain sensor
LANGLEY-11012 B72-10731 01

A remote test parameter profile display
LEWIS-11872 B73-10006 02

Time-based priority selection for analog circuits
M-FS-24242 B73-10154 02

Tetrad bubble domain chip arrangement for multiplexing
M-FS-22296 B73-10202 02

Data multiplexer using a tree switch
NPO-11333 B73-10289 02

Flexible format, computer accessed telemetry system
NPO-11358 B73-10290 02

Wireless telemetry system for floating bodies
KSC-10855 B74-10028 06

Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 B74-10209 01

High-efficiency multifrequency feed
GSFC-11909 B74-10288 02

Multiplexing technique for computer communications via satellite channels
ARC-10879 B75-10133 09

Multichannel high-speed correlator
NPO-13097 B75-10323 02

MULTIPLIERS

High-resolution spectral analysis
NPO-10748 B70-10039 01

Array multiplier
ERC-90076 B70-10047 02

High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01

Two techniques for digital filter design
M-FS-20015 B70-10314 01

Automatic, computerized testing of bolts
NPO-11090 B70-10657 06

Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01

High efficiency telemetry method
NPO-10388 B71-10371 02

Improved channel multiplier for radiation-and-particle detectors
NPO-12128 B74-10275 03

MULTIPROGRAMMING

Integrated multi-path program analysis and cost technique (IMPACT)
M-FS-21880 B72-10676 09

Modular digital computer system design
M-FS-22935 B74-10034 09

Central control element expands computer capability
M-FS-23216 B75-10103 02

MULTISPECTRAL BAND SCANNERS

Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03

Data processing large quantities of multispectral information
MSC-14472 B75-10080 03

Multispectral data analysis: LARSYS III
MSC-14823 B75-10235 03

Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
MSC-14866 B75-10236 03

MULTISPECTRAL PHOTOGRAPHY

Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03

Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02

MULTIVARIATE STATISTICAL

ANALYSIS

Method of identifying clusters representing statistical dependencies in multivariate data
ARC-10744 B75-10140 09

MULTIVIBRATORS

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01

Testing device for verifying the performance of digital recorders
KSC-10300 B70-10149 01

One-shot multivibrator with complementary components
MSC-13492 B70-10305 01

Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01

Artificial-feedback system
GSFC-10324 B70-10421 02

Intruder detection system
ARC-10097 B70-10638 02

Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01

Electronic strain-level counter
LANGLEY-10756 B70-10716 02

Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03

Improved relay chatter detector
NPO-10355 B71-10292 01

RF-controlled implantable solid state switch
ARC-10136 B71-10426 01

Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05

Miniature carbon dioxide sensor
MSC-13332 B71-10536 03

High noise immunity one shot
ARC-10137 B72-10047 01

Crystal-controlled multivibrator
NPO-11627 B72-10155 01

An ingestible temperature-transmitter
ARC-10583 B72-10275 01

N-P-N JUNCTIONS

Signal conditioner test set
KSC-10750 B73-10189 02

MUSCLES

Zero-g simulation system for therapeutic application
M-FS-14671 B71-10034 04

Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06

MUSCULAR FUNCTION

Compact telemetry package for remote monitoring of neutron responses in animals
NPO-11887 B74-10103 05

MYLAR (TRADEMARK)

Thermoelectric radiometer
ARC-10138 B70-10056 02

High-field superconducting nested coil magnet
ARG-10060 B70-10061 03

Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03

Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01

Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04

NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04

Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01

Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 B72-10154 03

Superior cryogenic insulation developed
M-FS-21560 B72-10187 04

Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03

Improved high-performance shock tube
NPO-11885 B72-10242 03

Improved electrodes for skin contacts
M-FS-21926 B72-10698 05

Lightweight inflatable material with low permeability
LANGLEY-10928 B73-10400 04

MYOCARDIUM

Subminiature transducers for measuring forces and deformation of heart muscle
NPO-13423 B75-10051 05

Catheter-tip force transducer for cardiovascular research
NPO-13643 B75-10211 05

N

N-P-N JUNCTIONS

Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01

Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01

Integrated circuit random-access memory decoder
ERC-10211 B70-10372 01

Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 B70-10374 09

Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
 LANGLEY-10358 B71-10035 01
 Overlap diffusion for increasing phototransistor dynamic range
 M-FS-20407 B72-10347 01
 Gate protective device for SOS array
 HQ-10745 B72-10755 01

N-TYPE SEMICONDUCTORS
 Solid state switch provides high input-to-output isolation
 HQ-10488 B70-10022 01
 Improved solid state electron-charge-storage device
 HQ-10152 B70-10074 01
 Technique for producing bipolar and MOS field effect transistors on a single chip
 MSC-13358 B70-10218 01
 Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10256 B70-10444 04
 Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10277 B70-10445 03
 Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
 LANGLEY-10358 B71-10035 01
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01
 Efficiency increased in new solar cell: A Concept
 LANGLEY-11174 B74-10090 01

NAPHTHENES
 Resin additive improves performance of high-temperature hydrocarbon lubricants
 LEWIS-11364 B71-10394 04

NASA PROGRAMS
 A study of NACA and NASA published information of pertinence in the design of light aircraft
 LANGLEY-10778 B70-10725 06

NASTRAN
 View factor computer program (VIEW)
 GSFC-11910 B75-10032 09

NATURAL GAS
 Computer program for natural gas flow through nozzles
 LEWIS-11534 B72-10362 09

NAVIER-STOKES EQUATION
 Computer program for the prediction of reorientation flow dynamics
 LEWIS-11816 B73-10307 09
 Algorithm for nonlinear stationary Navier-Stokes problem
 ARC-10960 B75-10143 09

NAVIGATION
 Telemetry receiver
 NPO-10746 B70-10008 02
 Chebyshev minimax control theory
 M-FS-20639 B70-10315 03
 Closed-loop control of stochastic nonlinear systems
 MSC-13858 B71-10306 09
 Software control for large scale on-board checkout: A concept
 MSC-13977 B72-10015 09

NAVIGATION AIDS
 Improved manual radio frequency direction finder
 M-FS-20507 B70-10422 02

Orbit, reentry, and landing attachment for globes
 LANGLEY-10626 B70-10656 03
 Hyperbola-generator for location of aperiodic events
 LANGLEY-10312 B70-10695 06
 Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
 M-FS-20860 B71-10072 07
 Performance evaluation system for inertial navigation equipment
 MSC-13542 B71-10087 02
 A simple dead-reckoning navigational system
 M-FS-21165 B72-10409 02
 Combined sun-acquisition and sun gate-sensor system for spacecraft attitude control
 NPO-13051 B73-10460 02

NAVIGATION INSTRUMENTS
 Ferrite attenuator modulation improves antenna performance
 NPO-12011 B70-10702 01
 Refracting lens system for low-scatter star-tracker: A Concept
 MSC-14724 B75-10043 03

NEAR INFRARED RADIATION
 Improved linings for integrating spheres
 MSC-12237 B70-10413 03
 Enhanced Lamb dip for absolute laser frequency stabilization
 HQ-10695 B72-10481 02

NEEDLES
 Fluid injection device for high-pressure systems
 MSC-15635 B70-10307 06
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05

NEGATIVE CONDUCTANCE
 Oscillating tank circuit eliminates ballast resistor in lamp control circuit
 M-FS-20891 B71-10275 01

NEGATIVE FEEDBACK
 Power semiconductor device with negative thermal feedback
 HQ-10577 B70-10262 01
 Method of stabilizing fluoric vortex valves and vortex amplifiers
 LEWIS-10553 B70-10668 07
 Wein bridge oscillator circuit
 MSC-13686 B71-10089 01
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Multiloop distributed RC active networks
 ARC-10200 B71-10177 01

NEGATIVE RESISTANCE CIRCUITS
 Constant current load matches impedances of electronic components
 GSFC-10982 B70-10643 01

NEGATIVE RESISTANCE DEVICES
 A conceptual current surge protector for incandescent lamps
 M-FS-16658 B70-10483 01

NEODYMIUM
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03

NEODYMIUM COMPOUNDS
 Growing single crystals in silica gel
 ERC-10306 B70-10479 02

NEON
 Electro-optical time marker for high-speed cameras
 KSC-10294 B70-10229 01
 Laser wavelength selector and output coupler
 ERC-10248 B70-10507 02
 Circuit minimizes current drain caused by neon indicator lamps
 NUC-10157 B70-10534 01
 Laser interferometry method for absolute measurement of the acceleration of gravity
 M-FS-21225 B71-10232 03
 Laser vibration analyzer
 XAC-01670 B71-10249 03
 New reaction tester accurate within 56 microseconds
 MSC-13604 B72-10031 05
 A sensitive image intensifier which uses inert gas
 LRL-10024 B72-10312 03

NETS
 Laser net - A concept for monitoring wingtip vortices on runways
 M-FS-20857 B71-10360 02

NETWORK ANALYSIS
 A topological approach to computer-aided sensitivity analysis
 ARC-10214 B71-10164 02
 Standardization and qualification of computer programs for circuit design
 M-FS-21537 B72-10142 09
 A linear circuit analysis program with stiff systems capability
 LANGLEY-11184 B73-10091 09
 Computer program for compressible flow network analysis
 LEWIS-11859 B73-10246 09
 Generalized current distribution rule
 LANGLEY-11565 B74-10093 02

NETWORK SYNTHESIS
 Active resistance capacitance filter design
 ARC-10020 B70-10034 01
 PERT "C"
 M-FS-20164 B70-10184 09
 Design procedure for improved active filters
 M-FS-20445 B70-10238 02

NEUROLOGY
 Post-operative cranial pressure monitoring system
 ERC-10336 B70-10436 05
 New reaction tester accurate within 56 microseconds
 MSC-13604 B72-10031 05
 Compact telemetry package for remote monitoring of neutron responses in animals
 NPO-11887 B74-10103 05

NEUTRALIZERS
 Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 B71-10212 08

NEUTRON ABSORBERS
 Boron-10 loaded inorganic shielding material
 M-FS-22280 B72-10740 04

NEUTRON ACTIVATION ANALYSIS
 Neutron-activation analysis applied to copper ores and artifacts
 ARG-10446 B70-10177 04
 Neutron ages computed from experimental activation data
 LEWIS-10949 B70-10557 09

SUBJECT INDEX

NEUTRON BEAMS

- Neutron-image intensifier
 - ARG-10249 B70-10240 03
 - Simple dynamic electromagnetic radiation detector
 - LEWIS-11159 B72-10227 03

NEUTRON COUNTERS

- Neutron-image intensifier
 - ARG-10249 B70-10240 03

NEUTRON DIFFRACTION

- A liquid radiation detector with high spatial resolution
 - MSC-13965 B72-10034 03

NEUTRON FLUX DENSITY

- Monte Carlo program for the transport of neutrons and gamma rays
 - LEWIS-11403 B71-10490 09

NEUTRON IRRADIATION

- The effects of nuclear power generators upon electronic instrumentation
 - NPO-11217 B70-10272 03
- Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
 - M-FS-18794 B70-10506 04
- Two new methods to increase the contrast of track-etch neutron radiographs
 - LEWIS-11893 B73-10027 03

NEUTRON PHYSICS

- Neutron ages computed from experimental activation data
 - LEWIS-10949 B70-10557 09

NEUTRON SOURCES

- Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
 - M-FS-22678 B73-10518 06

NEUTRON SPECTROMETERS

- Fast-neutron spectrometer developments
 - M-FS-22279 B73-10116 03

NEUTRONS

- Neutron ages computed from experimental activation data
 - LEWIS-10949 B70-10557 09
- Single-level resonance parameters fit nuclear cross-sections
 - NUC-10101 B70-10686 03
- Steady temperature and density distributions in a gas containing heat sources
 - LEWIS-10905 B71-10398 09
- Monte Carlo program for the transport of neutrons and gamma rays
 - LEWIS-11403 B71-10490 09
- Neutron radiographic viewing system
 - M-FS-22024 B72-10468 02
- Boron-10 loaded inorganic shielding material
 - M-FS-22280 B72-10740 04
- Long life neutron generator target using deuterium pass-through structure
 - LEWIS-11866 B74-10063 03
- Method of measuring the thickness of radioactive thin films
 - LEWIS-11971 B74-10065 03
- A high yield neutron target
 - LEWIS-12058 B74-10066 03

NEWTON SECOND LAW

- Inertia diaphragm pressure transducer
 - XAC-2981 B71-10200 05

NEWTON-RAPHSON METHOD

- Method for constructing periodic orbits in nonlinear dynamic systems
 - M-FS-14654 B71-10151 09

- The static nonlinear analysis of shells of revolution (SNASOR II)
 - JSC-14495 B73-10445 09

NEWTONIAN FLUIDS

- Parallel-plate viscometer
 - NPO-11387 B72-10700 03

NICHROME (TRADEMARK)

- High-field superconducting nested coil magnet
 - ARG-10060 B70-10061 03
- Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
 - LEWIS-11930 B74-10016 04

NICKEL

- Effects of high pressure hydrogen on metals
 - M-FS-18612 B70-10162 04
- Self-lubricating fluorine shaft seal material
 - HQ-10112 B70-10222 04
- Color television system using single gun color cathode ray tube
 - ERC-10098 B70-10464 02
- Improved burst disk/cutter assembly
 - KSC-10516 B70-10583 07
- Thermocouple installation in thin-walled tubes
 - LEWIS-11222 B70-10655 01
- Heat-transfer data for hydrogen
 - M-FS-18754 B70-10667 03
- Compact electric heater
 - LEWIS-11172 B70-10677 03
- Parallel-gap welding for joints between copper conductors and Kovar
 - M-FS-21224 B71-10168 08
- Erosion of metals by multiple impacts with water
 - HQ-10591 B71-10197 04
- Water electrolysis module
 - ARC-10246 B71-10203 03
- Plating by glass-bead peening
 - GSFC-11163 B71-10256 08
- Cast segment evaluation
 - M-FS-21354 B71-10363 08
- Copper/nickel eutectic brazing of titanium
 - ARC-10337 B71-10525 08
- Wide-range dynamic pressure sensor
 - ARC-10263 B72-10196 03
- Radiation-induced nickel deposits
 - LEWIS-10965 B72-10456 04
- Vapor-deposited platinum as a fuel-cell catalyst
 - M-FS-21317 B73-10475 04
- Honeycomb battery plaque
 - GSFC-11367 B73-10519 01
- High strength, wire-reinforced electroformed structures
 - LEWIS-12087 B74-10018 08

NICKEL ALLOYS

- Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
 - HQ-10565 B70-10035 01
- Rene 41 heat treatment electron microscopy
 - M-FS-18633 B70-10081 04
- Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
 - M-FS-18712 B70-10092 04
- Effects of high pressure hydrogen on metals
 - M-FS-18612 B70-10162 04
- High temperature rare earth solid lubricants
 - LEWIS-10983 B70-10175 04

- Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
 - LEWIS-10933 B70-10183 04
- Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 - LEWIS-10515 B70-10185 04
- Intermolecular bonding of metals or alloys by thermochemical decomposition
 - M-FS-13823 B70-10194 08
- Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
 - M-FS-18427 B70-10199 04
- Oxidation resistant iron and nickel alloys for high temperature use
 - LEWIS-10936 B70-10210 04
- Coercive force of thin magnetic films
 - NPO-10750 B70-10221 03
- Mechanism and kinetics of aging in Inconel 718
 - M-FS-18775 B70-10261 04
- High expansion coefficient glasses can be sealed to common metals
 - LEWIS-10698 B70-10429 08
- High-temperature nickel-brazing alloy
 - LEWIS-10928 B70-10537 08
- Electron fractography used to examine nickel-base alloys
 - M-FS-18649 B70-10571 04
- Low-cost high-temperature brazing material
 - LEWIS-11209 B70-10672 04
- Metal alloy resistivity measurements at very low temperatures
 - NUC-10557 B71-10104 04
- Fabrication techniques for thoria-dispersed /TD/ nickel
 - LEWIS-11240 B71-10369 08
- Practical method of diffusion-welding steel plate in air
 - LEWIS-11387 B71-10455 08
- Solid state welding of dispersion-strengthened nickel alloys
 - LEWIS-11388 B71-10520 08
- Bonding titanium to Rene 41 alloy
 - ARC-10311 B72-10041 08
- Advanced protective coating for superalloys
 - LEWIS-11473 B72-10150 04
- A protective coating for stainless steel
 - LEWIS-11267 B72-10256 04
- Joining precipitation-hardened nickel-base alloys by friction welding
 - LEWIS-11514 B72-10288 08
- High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
 - LEWIS-11634 B72-10344 04
- Advanced alloy design technique: High temperature cobalt base superalloy
 - LEWIS-10436 B72-10514 04
- Electro-chemical grinding
 - LANGLEY-10801 B72-10744 08
- Improved photoetching fabrication method
 - LEWIS-11268 B72-10745 08
- Metal-metal reinforced laminar composites
 - LEWIS-11790 B73-10068 04
- Oxidation resistant, thoria-dispersed nickel-chromium-aluminum alloy
 - LEWIS-11541 B73-10077 04
- Resistance spot welding of dispersion-strengthened nickel alloys
 - LEWIS-12075 B73-10315 04

- Materials data handbook on Inconel Alloy 718
M-FS-22793 873-10396 04
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 874-10002 04
New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 874-10003 04
Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 874-10007 04
High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 874-10082 04
Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 874-10248 04
Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 875-10246 04
- NICKEL CADMIUM BATTERIES**
Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 871-10064 02
Screening method improves performance of nickel-cadmium batteries
GSFC-11260 871-10411 04
Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 871-10477 05
Corrugated battery electrode
GSFC-11368 873-10515 01
Honeycomb battery plaque
GSFC-11367 873-10519 01
Zener-regulated solar array/battery power system
M-FS-23195 875-10162 02
Nongassing NiCd battery cell
NPO-11853 875-10174 04
Machine for fabrication of battery-electrode plaques
GSFC-12004 875-10216 08
100-ampere-hour NiCd battery system
MSC-14774 875-10233 01
- NICKEL COATINGS**
Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 871-10355 05
Graphite-reinforced aluminum composite
M-FS-21077 871-10482 04
High-friction mechanical grips
JSC-19260 873-10234 06
Survey of coatings for solar collectors
LEWIS-12510 875-10067 04
- NICKEL COMPOUNDS**
Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 870-10021 01
- NICKEL FLUORIDES**
Self-lubricating fluorine shaft seal material
HQ-10112 870-10222 04
- NICKEL OXIDES**
Electrodes for sealed secondary batteries
ARC-10238 872-10050 02
- NICKEL PLATE**
Advances in electrometer vacuum tube design
GSFC-10729 870-10696 01
Electroplating on titanium alloy
M-FS-21251 871-10338 08
- Discrete-component S-band power amplifier
GSFC-11248 871-10365 01
Sputter etching of hemispherical bearings
HQ-10712 872-10534 08
Selective coating for collecting solar energy on aluminum
M-FS-22562 873-10527 04
Machine for fabrication of battery-electrode plaques
GSFC-12004 875-10216 08
- NICKEL STEELS**
High-strength alloy with resistance to hydrogen-environment embrittlement
M-FS-19234 874-10265 04
- NICKEL ZINC BATTERIES**
Corrugated battery electrode
GSFC-11368 873-10515 01
Honeycomb battery plaque
GSFC-11367 873-10519 01
- NIMBUS SATELLITES**
Program for improved electrical harness documentation and fabrication
GSFC-10386 871-10054 09
Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 872-10606 09
Computer program for spacecraft-booster separation spring selection, set composition, and location determination
GSFC-11616 874-10037 09
- NIOBATES**
Dopant for sodium niobate capacitor dielectric
MSC-11773 870-10190 01
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 870-10269 03
Fabrication of electroacoustic RF amplifiers
ERC-10266 870-10460 01
- NIOBUM**
The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 870-10146 04
Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 871-10356 04
New twisted intermetallic compound superconductor: A concept
LEWIS-11015 872-10282 04
- NIOBUM ALLOYS**
Mechanism and kinetics of aging in Inconel 718
M-FS-18775 870-10261 04
Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 870-10674 04
Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 871-10229 04
Insulating effectiveness of self-spacing dimpled foil
LEWIS-10941 872-10406 04
Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 873-10003 08
A spiraled niobium tin superconductive ribbon
LEWIS-11726 873-10044 04
- Metallic composites as high-temperature fasteners
M-FS-22438 873-10081 04
Brazing alloys for high temperature service
LEWIS-11374 873-10205 06
Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 874-10085 04
- NIOBUM CARBIDES**
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 870-10467 04
- NIOBUM COMPOUNDS**
Development of superconductive magnets
LEWIS-11170 870-10678 03
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 871-10216 04
Alternating current losses in superconducting coils
M-FS-21129 872-10360 03
Magnets with stabilized conductors
HQ-10727 872-10465 03
- NITRATES**
Stress corrosion crack inhibiting method for titanium
NPO-10271 870-10129 03
Silver stain for electron microscopy
ARC-10661 872-10415 05
- NITRIC ACID**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 870-10233 04
Welded polypropylene liners for large descaling tanks
M-FS-18711 871-10012 07
Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 872-10006 05
- NITRIC OXIDE**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 870-10233 04
Detection of nitric oxide pollution
ARC-10709 873-10018 03
- NITRIDES**
Growth of single-crystal gallium nitride
ERC-10301 870-10473 03
A study of nitride devices for computer memory applications
M-FS-20971 871-10350 03
- NITRITES**
Accurate pointing of tungsten welding electrodes
ARG-10449 871-10048 08
- NITRO COMPOUNDS**
Intumescent coatings as fire retardants
ARC-10099 870-10450 04
- NITROGEN**
Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 870-10021 01
Gas flowmeter
M-FS-20663 870-10050 07
A stabilized low-frequency alternating-current electric arc
LEWIS-10442 870-10065 01
Atmospheric composition affects heat- and mass-transfer processes
HQ-10271 870-10094 04
Estimating sensitivity of vacuum gages
LEWIS-11007 870-10099 03

Ultrasonic propagation in gases at high temperatures

HQ-10498 870-10137 03

Prediction of gas leakage of environmental control systems

HQ-10270 870-10201 05

Uniform data system standardizes technical computations and the purchasing of commercially important gases

NUC-10549 870-10333 04

Improved photoionization mass spectrometer

LANGLEY-10180 870-10402 04

Testing of brazed and welded connections of stainless-steel tubing

M-FS-20806 870-10417 08

Strain compatibility tests for sprayed foam cryogenic insulation

M-FS-16063 870-10423 04

Bistable fluidic valve is electrically switched

NPO-10416 870-10517 07

Novel wave generator adaptable to indoor surfing

LEWIS-11096 870-10563 03

Deadweight calibration of pressure gages without contamination

M-FS-18690 870-10586 07

Determination of nitrogen in titanium nitride

LEWIS-11046 870-10588 04

Crystal growing by electrodeposition from dense gaseous solutions

NPO-10440 870-10676 04

Updated, expanded, fluid properties handbook

M-FS-21169 871-10078 04

Improved method for calculating pump thermodynamic suppression head

M-FS-20852 871-10239 07

Technique for in-place welding of aluminum backed up by a combustible material

LEWIS-11328 871-10257 08

Compressed gas handbook

KSC-10662 871-10272 03

Synthesis of a new class of highly fluorinated aliphatic diisocyanates

M-FS-20883 871-10300 04

New method speeds body inert gas saturation and utilizes surface decompression

MSC-13543 871-10330 05

Effects of the thermal sterilization procedure on polymeric products

NPO-11688 871-10362 04

Antipollution system to remove nitrogen dioxide gas

LEWIS-11297 871-10393 04

Pulsed high-power arc heater with improved cathode and triggering mechanism

ARC-10173 872-10048 03

Glass technology involved in the manufacture of magnetometer components

GSFC-11283 872-10132 03

Aircrew oxygen system

ARC-10247 872-10195 05

Diatomic infrared gasdynamic laser permits selection of wavelengths

ARC-10370 872-10206 03

Simple gas chromatographic system for analysis of microbial respiratory gases

ARC-10403 872-10207 03

Counter lung

ARC-10248 872-10219 05

Oxygen carrier for gas chromatographic analysis of inert gases in propellants

ARC-10574 872-10249 04

Small turbing-type flowmeters for liquid hydrogen

LEWIS-11535 872-10331 06

Nonflammable potting, encapsulating and/or conformal coating compound

MSC-13499 872-10337 04

Evaluating foam heterogeneity

AEC-10046 872-10365 04

Proposed semiconductor film improvement

HQ-10685 872-10438 04

Temperature control of a cryogenic bath

HQ-10788 872-10532 03

Improved sampling of compressed gases for condensable hydrocarbon content

KSC-10304 872-10540 06

An equation of state for oxygen and nitrogen

JSC-14465 873-10394 04

Rapid method for determining nitrogen in tantalum and niobium alloys

LEWIS-12237 874-10085 04

NITROGEN COMPOUNDS

Photochromism of dihydroquinolines

HQ-10574 870-10574 04

Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide

M-FS-21113 872-10321 04

NITROGEN DIOXIDE

Antipollution system to remove nitrogen dioxide gas

LEWIS-11297 871-10393 04

NITROGEN IONS

Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices

LANGLEY-10630 871-10334 01

NITROGEN OXIDES

Airborne spectrometer senses several gases

MSC-13234 870-10438 03

Fluidized-bed combustion reduces atmospheric pollutants

AEC-10085 872-10431 04

NITROGEN POLYMERS

Functionally terminated liquid nitroso fluorocarbon terpolymers

M-FS-21539 872-10493 04

NITROGEN TETROXIDE

Long life, low cost ball valve, with lifted seals and cartridge type construction

MSC-13430 870-10653 07

Updated, expanded, fluid properties handbook

M-FS-21169 871-10078 04

Leaching of nitroso rubber material removes uncured polymer

MSC-17185 872-10449 04

NITROGUANIDINE

Explosive bonded TZM-wire-reinforced C129Y columbium composites

M-FS-20925 871-10356 04

NITROSO COMPOUNDS

Development of conformal coating materials

M-FS-21393 871-10483 04

Leaching of nitroso rubber material removes uncured polymer

MSC-17185 872-10449 04

NITROSYLS

Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride

ARG-10412 870-10233 04

NITRIL FLUORIDES

Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride

ARG-10412 870-10233 04

NOBLE METALS

Several new catalysts for reduction of oxygen in fuel cells

HQ-10452 870-10021 01

High-temperature, long-term drift of platinum-rhodium thermocouples

LEWIS-11111 870-10552 01

Granular two-phase insulation systems

NPO-12068 871-10290 04

Long-term drift of thermocouples at 1600 K

LEWIS-11471 872-10176 01

High-temperature ceramic-to-ceramic seals

ARC-10319 872-10199 04

Research on bearing lubricants for use in a high vacuum

M-FS-22119 872-10469 04

A new high temperature noble metal thermocouple pairing

LEWIS-12545 875-10245 03

NODES (STANDING WAVES)

Constant-amplitude, frequency-independent phase shifter

ARC-10269 871-10230 02

Vibration analysis by time-average holography

LANGLEY-10614 871-10333 03

Frame modal analysis

MSC-17562 871-10414 09

Node-recording method for stiffness matrix wavefront reduction in structural analysis

NPO-11620 873-10296 09

NODULES

Dropouts in magnetic tape recording and reproduction

NPO-11519 871-10160 03

NOISE (SOUND)

Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease

ERC-90066 870-10376 01

Systems of coding and their implementation

NPO-11469 871-10006 09

New filter technique improves home television reception

MSC-13729 871-10141 02

Isolated-line commutator-amplifier

M-FS-20734 871-10148 02

A frequency division multiplex technique for transmitting commands

KSC-10521 871-10169 02

Self-synchronizing, bi-orthogonal coded PCM telemetry system

GSFC-11237 871-10324 02

Vibration analysis by time-average holography

LANGLEY-10614 871-10333 03

Split stator vane row for fans and compressors

ARC-10288 871-10528 06

Loudness (annoyance), prediction procedure for steady sounds

LEWIS-11761 872-10579 05

NOISE GENERATORS

Handbook of noise ratings
 LANGLEY-11799 B75-10075 03

NOISE GENERATORS
 Evaluation of jet engine noise
 M-FS-21416 B72-10263 03

NOISE INTENSITY
 Methods for measuring the loudness and noisiness of complex sounds
 HQ-10332 B70-10260 03
 Acoustic spectral analysis and testing techniques
 NPO-11554 B72-10341 03

NOISE PROPAGATION
 A theoretical study of aerodynamic noise generation
 M-FS-24167 B73-10209 03

NOISE REDUCTION
 Improved magnetron cold-cathode ion source
 LANGLEY-10387 B70-10023 02
 Data acquisition from high-speed rotating shafts
 LEWIS-10886 B70-10043 01
 Immersed ultrasonic inspection of high acoustical attenuative structures
 MSC-15702 B70-10055 03
 Improved low cost ac-to-dc converter
 NPO-11055 B70-10076 01
 Highly stable biased amplifier and stretcher system
 ARG-10354 B70-10142 01
 COPTRAN - A method of optimum communication systems design
 ERC-10273 B70-10501 09
 Simple data-smoothing and noise-suppression technique
 M-FS-20803 B70-10627 06
 Technique for lowering the noise figure in RF amplifiers
 HQ-10435 B70-10650 01
 Electronic device increases threshold sensitivity and removes noise from FM communications receiver
 MSC-12165 B71-10091 02
 Split stator vane row for fans and compressors
 ARC-10288 B71-10528 06
 Reduction of fan noise: A concept
 ARC-10312 B72-10040 06
 Evaluation of jet engine noise
 M-FS-21416 B72-10263 03
 Reduction of noise in gyro outputs
 NPO-11603 B72-10743 06
 Radial honeycomb core
 ARC-10727 B73-10340 08
 All-digital phase-lock loops for noise-free signals
 NPO-11914 B73-10350 01
 Television noise-reduction device
 JSC-12607 B73-10431 02
 Improved method for design of expansion-chamber mufflers with application to operational helicopter
 LANGLEY-11548 B73-10471 03
 Minicomputer-controlled frequency generator
 NPO-11962 B74-10163 02
 Noise suppressor
 LANGLEY-11141 B74-10261 03
 Prediction of aircraft noise source and estimation of noise-level contours
 ARC-10880 B75-10060 09
 Integrated-circuit balanced parametric amplifier
 M-FS-23193 B75-10102 01

Minimization of jet and core noise by rotation of flow
 ARC-10712 B75-10131 06

A hybrid general-purpose bit synchronizer
 MSC-14330 B75-10169 02

Computer program for the attenuation of high bypass turbofan engine noise
 LEWIS-12179 B75-10242 09

Low-noise K(u)-band receiver input system
 NPO-13645 B75-10281 02

Delay-lock-loop code-correlation synchronizer
 GSFC-11868 B75-10291 02

Optical-noise suppression unit: A concept
 MSC-12640 B75-10315 03

Computer/computer interface
 NPO-13428 B75-10326 02

NOISE SPECTRA
 Comparison of aerodynamic noise from three nose-cylinder combinations
 M-FS-20816 B70-10690 03

NOISE THRESHOLD
 Graphical method to predict the dynamic response of FM receivers
 KSC-10111 B70-10119 01

Audio signal processor
 MSC-12223 B70-10180 01

NOMENCLATURES
 Pictorial display of materials and processes aids in fabricating complex assemblies
 M-FS-24006 B71-10341 01

NOMOGRAPHS
 Nomograph for prediction of RF-breakdown voltages
 NPO-11819 B73-10386 01

NONDESTRUCTIVE TESTS
 Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
 M-FS-20561 B70-10012 06

A method for the visual detection of holes in thin polymeric films
 LEWIS-10876 B70-10027 04

Acoustic vibration test detects intermittent electrical discontinuities
 MSC-15158 B70-10118 01

Holographic stress analysis
 M-FS-20687 B70-10123 01

Nondestructive sonic testing of adhesive-bonded composites
 M-FS-20793 B70-10397 08

Nondestructive assessment of penetration of electron-beam welds
 MSC-15955 B70-10466 08

Ultrasonic detection of flaws in fusion butt welds
 M-FS-20824 B70-10514 08

Nondestructive spot tests allow rapid identification of metals
 LANGLEY-10539 B70-10520 04

Compression springs used for vibration isolation
 NPO-11012 B70-10523 07

Latching overcurrent circuit breaker
 NPO-11131 B70-10524 01

Study of second breakdown in power transistors using infrared techniques
 M-FS-20748 B71-10021 01

Design and development of a fast scan infrared detection and measurement instrument
 M-FS-20749 B71-10022 03

Ultrasonics used for high-precision nondestructive inspection of brazed joints
 NUC-10352 B71-10045 08

Methyl alcohol used as penetrant inspection medium for porous materials
 NUC-10419 B71-10103 06

Locating tube blockage that X-ray cannot detect
 NUC-10386 B71-10129 06

Instruction manuals for radiographic nondestructive testing
 M-FS-21350 B71-10156 06

Digital decorrelator saves time and expense in acoustic testing of structures
 NPO-11542 B71-10157 03

Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
 M-FS-21160 B71-10208 04

Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 B71-10226 02

Ultrasonic scanning system for in-place inspection of brazed-tube joints
 M-FS-21166 B71-10227 06

Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 B71-10247 08

Study of nondestructive techniques for redundancy verification
 KSC-10661 B71-10258 02

Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06

Qualifications and certification of nondestructive testing personnel
 M-FS-20850 B71-10271 06

Rapid method for sampling metals for materials identification
 MSC-17332 B71-10320 04

Multispectral infrared imaging interferometer
 MSC-12404 B71-10325 02

Accelerated battery-life testing - A concept
 GSFC-11085 B71-10348 06

Radiographic inspection specifications for electronic components
 M-FS-20723 B71-10438 01

Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01

Apparatus tests flexural durability of FCC
 M-FS-20113 B71-10458 08

Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
 LANGLEY-10841 B71-10493 07

Nondestructive testing of bond integrity in foam insulation/aluminum composites
 M-FS-20786 B71-10507 06

Method of determining thermal conductivity in multi-layer insulation systems
 M-FS-20213 B72-10154 03

Nondestructive-test standards for evaluation of fiber-reinforced composites
 M-FS-21288 B72-10157 04

Nondestructive testing of microtab welds
 ARC-10176 B72-10296 02

Simple non-destructive tests for electroexplosive devices
 NPO-11563 B72-10315 01

SUBJECT INDEX

Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03

Nondestructive testing for braze voids in thin panels by use of special coatings
LANGLEY-10486 B72-10374 08

Deflection resistance indicator
M-FS-24010 B72-10401 04

Acoustic emission used as weld quality monitor
AEC-10018 B72-10427 08

Neutron radiographic viewing system
M-FS-22024 B72-10468 02

Magnetic circuitry mutual coupling probe
M-FS-21664 B72-10535 02

Analysis of microsize particulates
ARC-10647 B72-10565 04

Spark ultrasonic transducer
M-FS-21233 B72-10594 04

Video enhancement of X-ray and neutron radiographs
LEWIS-11944 B73-10009 03

Fatigue testing device
LANGLEY-10426 B73-10047 07

Prototype ultrasonic instrument for quantitative testing
M-FS-22350 B73-10051 02

Holographic nondestructive testing of laminates
JSC-19107 B73-10108 04

Real time statistical analysis of acoustic emission signals for flaw monitoring systems
M-FS-24402 B73-10212 03

Bonded panel, flaw detection standards
LANGLEY-11399 B73-10240 06

Digital servo control of random sound fields
NPO-11623 B73-10297 02

Electro-optical device for monitoring wire size
LANGLEY-11358 B73-10321 02

Acoustic-emission signal-processing analog unit for locating flaws in large tanks
M-FS-24424 B73-10325 06

Laser scanner for testing semiconductor chips
M-FS-22693 B73-10327 02

Microwave holography for nondestructive testing
ARC-10774 B73-10379 03

Flaw detection by mechanical resonant measurement
M-FS-19218 B73-10440 03

Nondestructive leak testing
LANGLEY-11561 B73-10464 06

X-ray opaque additive for inspection of weld joints
M-FS-22896 B73-10528 08

Detection of cracks in surface insulation
MSC-14187 B74-10095 04

Valve degradation detector
ARC-10850 B74-10117 03

Surface roughness measured by optical signatures
ARC-10853 B74-10118 03

Guidebook of nondestructive evaluation techniques for materials and structures
LEWIS-12272 B74-10122 04

Holographic evaluation of fatigue cracks by a compressive stress (HYSTERESIS) technique
MSC-14555 B74-10156 06

System for measuring transients in fluid flow
ARC-10852 B74-10217 03

Compact source of soft X-rays
HQ-10732 B74-10232 03

Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06

Strain gauge sensitivity improved by using a composite beam
NPO-13170 B74-10297 07

Isometric scan method for ultrasonic evaluation of composite panels
LEWIS-12437 B75-10014 01

Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
LEWIS-12502 B75-10138 03

Nondestructive measurement of capillary tube internal diameter
LANGLEY-11647 B75-10156 02

Bubble-domain circuit wafer evaluation coil set
LANGLEY-11728 B75-10197 01

Ultrasonic detection of flaws in large structural areas
MSC-19499 B75-10201 06

Microcircuit testing and fabrication, using scanning electron microscopes
M-FS-23159 B75-10304 01

Read-only optical storage medium
M-FS-23169 B75-10305 03

Quality control of microelectronic wire bonds
M-FS-23327 B75-10312 01

Fast semiautomatic dimensional test set and data logger
MSC-19554 B75-10322 07

NONEQUILIBRIUM CONDITIONS
Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06

Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09

NONFERROUS METALS
Metal detector system
ARC-10265 B70-10511 01

Metal drilling with portable hand drills
M-FS-15180 B70-10594 08

NONFLAMMABLE MATERIALS
A new low-expansion nonflammable printed circuit board
M-FS-20408 B70-10154 01

Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 B70-10540 04

New type of nonflammable paper
MSC-13432 B70-10546 04

Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04

Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04

Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04

Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04

Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07

New materials for fireplace logs
M-FS-21363 B71-10339 04

Development of conformal coating materials
M-FS-21393 B71-10483 04

Halogenation of microcapsule walls
ARC-10410 B72-10161 04

Nonflammable potting, encapsulating and/or conformal coating compound
MSC-13499 B72-10337 04

Nonflammable potting-encapsulating and conformal coating compounds
JSC-14164 B73-10102 04

NONLINEAR EQUATIONS
General technique for measurement of refractive index variations
HQ-10359 B70-10064 01

The determination of stability domains for nonlinear dynamical systems
M-FS-14832 B70-10539 03

Global search algorithm for optimal control
ARC-10359 B70-10637 09

Algorithm for Liapunov stability analysis
ARC-10498 B72-10023 09

Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04

Computer program for calculation of complex chemical equilibrium compositions
LEWIS-11714 B72-10718 09

NONLINEAR FEEDBACK
Theory and application of feedback shift registers
NPO-11486 B71-10451 02

NONLINEAR FILTERS
High voltage protection network
ARC-10197 B72-10119 02

NONLINEAR PROGRAMMING
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09

NONLINEAR SYSTEMS
Performance-limit criteria for the design of fast-response servo-actuation systems
LEWIS-11022 B70-10152 02

Theory and application of Kalman filtering
M-FS-20491 B70-10309 06

Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01

Nonlinear damping in structures
M-FS-20701 B70-10341 03

Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 B71-10151 09

Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01

On-line analysis of random vibrations
ARC-10154 B71-10284 09

Closed-loop control of stochastic nonlinear systems
MSC-13858 B71-10306 09

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09

Algorithm for Liapunov stability analysis
ARC-10498 B72-10023 09

A nonlinear-coherence receiver
NPO-11921 B73-10144 02

NONLINEARITY
Simple, accurate temperature-measuring instrument
MSC-12327 B70-10303 01

NONPOLAR GASES

High-impact dynamic-response analysis of nonlinear structures

NPO-11716 B71-10134 09

Approximate properties of the response of nonlinear dynamic systems to stochastic inputs

M-FS-20717 B71-10273 03

Precision calibration and reference voltage source for data acquisition systems

M-FS-20950 B71-10298 02

Pressure transducer with four-decade dynamic range

KSC-10384 B71-10323 01

Structural behavior of tapered inflated fabric cylinders under various loading conditions

MSC-15317 B71-10327 06

Analysis of multilayered fiber composites

LEWIS-11347 B71-10372 09

Electronic switching circuit uses complementary non-linear components

AEC-10060 B72-10236 01

Program for analysis of nonlinear equilibrium and stability (PANES)

M-FS-23172 B75-10100 09

Method of identifying clusters representing statistical dependencies in multivariate data

ARC-10744 B75-10140 09

NONPOLAR GASES

Solubility of non-polar gases in electrolyte solutions

LEWIS-11052 B70-10114 04

Simple method for predicting viscosity of gas mixtures

LEWIS-11060 B70-10361 04

NONUNIFORMITY

An improvement in blackbody cavity design

LANGLEY-10292 B70-10711 03

NORMAL DENSITY FUNCTIONS

Statistical analysis tables for truncated or censored samples

M-FS-21024 B71-10351 03

Device for measuring electric fields

ARC-10164 B72-10148 03

A study of the power spectral density of an FM signal

M-FS-21070 B72-10361 02

NORMALIZING (HEAT TREATMENT)

Radiation view factor program

M-FS-21075 B71-10106 09

NOSE CONES

Comparison of aerodynamic noise from three nose-cylinder combinations

M-FS-20816 B70-10690 03

Water impact loads

M-FS-21955 B72-10621 09

NOTCH SENSITIVITY

New understanding of fiber composite materials

NPO-11605 B71-10161 04

NOTCH STRENGTH

Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen

M-FS-18753 B70-10364 04

NOTCH TESTS

Effects of high pressure hydrogen on metals

M-FS-18612 B70-10162 04

The mechanism of stress-corrosion cracking in 7075 aluminum alloy

M-FS-18614 B70-10527 04

NOTCHES

Vee-notch tool cuts specimens

M-FS-20730 B70-10411 06

NOZZLE DESIGN

Experimental investigation and analysis of two sources of nozzle-thrust misalignment

NPO-11355 B70-10406 06

Design and evaluation of convectively cooled nozzles

LEWIS-10894 B71-10508 09

Ejector nozzle with massive blowing

ARC-10621 B72-10693 06

Air-atomizing splash-cone fuel nozzle reduces pollutant emissions from turbojet engines

LEWIS-11918 B73-10200 06

Computer program to determine the irrotational nozzle admittance

LEWIS-12019 B73-10233 09

Powered fire nozzle for fast penetration of structures: A concept

MSC-19528 B75-10111 06

Improved aircraft reaction nozzles

ARC-10906 B75-10284 06

NOZZLE EFFICIENCY

Spray momentum measuring system

MSC-12305 B71-10137 05

NOZZLE FLOW

Simplified computation of compressible fluid flow parameters

KSC-10400 B70-10225 06

Swirl-can combustor segment

LEWIS-11082 B70-10322 07

Low cost, logarithmic mass flow computer

LEWIS-11001 B71-10407 06

Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction

LEWIS-11636 B72-10070 09

Wide angle solar sensor

NPO-11341 B72-10080 01

Computer program for natural gas flow through nozzles

LEWIS-11534 B72-10362 09

Air assist fuel nozzle reduces aircraft gas turbine engine emissions at idle operation

LEWIS-11512 B72-10434 07

Ejector nozzle with massive blowing

ARC-10621 B72-10693 06

Computer program to determine the irrotational nozzle admittance

LEWIS-12019 B73-10233 09

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)

LANGLEY-11596 B74-10236 09

NOZZLE GEOMETRY

Digital program analyzes supersonic flow field within bell-shaped rocket nozzles

M-FS-14292 B70-10597 09

Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction

LEWIS-11636 B72-10070 09

Vented vectoring-nozzle for STOL and V/STOL aircraft

ARC-10839 B74-10058 06

NOZZLE THRUST COEFFICIENTS

Digital program analyzes supersonic flow field within bell-shaped rocket nozzles

M-FS-14292 B70-10597 09

Vented vectoring-nozzle for STOL and V/STOL aircraft

ARC-10839 B74-10058 06

NOZZLES

Temperature-controlled fluidic device A concept

HQ-10446 B70-10167 03

Flow characteristics of an air jet impinging on a flat surface

LEWIS-11129 B70-10670 03

Variable-area nozzle automatically controls fluid flow

LEWIS-11217 B71-10222 07

Dynamic valve to supply constant total thrust to two orifice jets

ARC-10239 B72-10120 07

NUCLEAR AUXILIARY POWER UNITS

Radioisotope heater

ARC-10791 B74-10051 03

Economical technique for fragmentation testing

ARC-10792 B74-10052 04

NUCLEAR CAPTURE

Single-level resonance parameters fit nuclear cross-sections

NUC-10101 B70-10686 03

NUCLEAR ELECTRIC POWER GENERATION

Improved control for nuclear/thermionic power source: A concept

NPO-13114 B74-10167 03

NUCLEAR ENERGY

Thermally induced oscillations in fluid flow

M-FS-20449 B70-10299 03

NUCLEAR ENGINE FOR ROCKET VEHICLES

A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles

LEWIS-10951 B70-10648 01

NUCLEAR FISSION

Single-level resonance parameters fit nuclear cross-sections

NUC-10101 B70-10686 03

NUCLEAR FUELS

Single-level resonance parameters fit nuclear cross-sections

NUC-10101 B70-10686 03

PPUAS--photopeak unfolding and self-shielding program

NPO-13188 B73-10087 09

NUCLEAR FUSION

Theoretical study of a plasma accelerator

NPO-11480 B70-10683 03

Improved plasma accelerator

ARC-10109 B71-10454 03

NUCLEAR HEAT

Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole

NUC-10227 B70-10356 03

NUCLEAR MAGNETIC RESONANCE

Properties of nonaqueous electrolytes

LEWIS-11017 B70-10080 04

Precise audio-frequency markers for nuclear magnetic resonance spectra

NPO-11147 B70-10086 02

Single-level resonance parameters fit nuclear cross-sections

NUC-10101 B70-10686 03

Wide-range nuclear magnetic resonance detector

LEWIS-11513 B72-10478 03

NUCLEAR PHYSICS

Data from various sources provide standard single-level resonance parameters for uranium 233

NUC-10229 B70-10357 03

SUBJECT INDEX

Neutron ages computed from experimental activation data
LEWIS-10949 B70-10557 09

Single-level resonance parameters fit nuclear cross-sections
NUC-10101 B70-10686 03

Quick response targeting program
M-FS-15157 B71-10147 09

NUCLEAR POWER PLANTS

Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03

Computer program for afterheat temperature distribution for mobile nuclear power plant
LEWIS-11693 B72-10634 09

Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 B75-10282 06

NUCLEAR PROPULSION

A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01

Producing graphite with desired properties
NUC-11001 B71-10042 04

NUCLEAR QUADRUPOLE RESONANCE

Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04

NUCLEAR RADIATION

A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01

Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07

High temperature circuit breaker
LEWIS-90265 B70-10721 01

Liquid-hydrogen/nuclear-radiation resistant seals
M-FS-21364 B71-10340 03

Multilayer flat electrical cable
ARC-10734 B73-10264 01

NUCLEAR REACTOR CONTROL

Fast-neutron spectrometer developments
M-FS-22279 B73-10116 03

NUCLEAR REACTORS

Compact, electromagnetic multiple-stream multiple-stream pump for liquid metals - Design concept
NPO-10755 B70-10090 07

The effects of nuclear power generators upon electronic instrumentation
NPO-11217 B70-10272 03

Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
NUC-10227 B70-10356 03

High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04

Single-level resonance parameters fit nuclear cross-sections
NUC-10101 B70-10686 03

Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09

Simple dynamic electromagnetic radiation detector
LEWIS-11159 B72-10227 03

NUCLEAR RESEARCH

Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07

Numerical integration of second order differential equations
M-FS-20536 B71-10186 09

NUCLEAR ROCKET ENGINES

Thermal conductivity of gaseous and liquid hydrogen
NUC-10558 B71-10105 04

Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03

NUCLEATION

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04

Condensation of wet vapors in turbines
NPO-10773 B70-10613 09

Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04

NUCLEI (NUCLEAR PHYSICS)

Single-level resonance parameters fit nuclear cross-sections
NUC-10101 B70-10686 03

NULL ZONES

Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01

Pulse width-pulse rate modulator
ARC-10025 B71-10497 01

NUMERICAL ANALYSIS

Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09

Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02

Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01

Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09

Thermal scale modeling
M-FS-21268 B71-10432 03

Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09

Prediction of ducted fan performance
ARC-10615 B72-10064 09

Selecting digital filters
M-FS-20933 B72-10156 01

Flow equation for porous plug and capillary tube flow restrictors
GSFC-11387 B72-10289 06

Sunspot analysis and prediction
M-FS-21724 B72-10317 03

Mathematical techniques for estimating operational readiness of complex systems
MSC-17694 B72-10335 09

Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07

Variable boundary II heat conduction
LEWIS-10679 B72-10444 09

Equations to assess the impact resistance of fiber composites
LEWIS-11486 B72-10503 04

NUMERICAL INTEGRATION

High speed sequential decoder
ARC-10657 B72-10568 09

Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04

Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04

Significance arithmetic experimental package (SIGPAC)
GSFC-11499 B72-10600 09

Computer program analyzes and monitors electrical power systems (POSIMO)
GSFC-11505 B72-10610 09

Spectral analysis of multiple time series
M-FS-18859 B72-10614 09

Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09

Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09

Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
GSFC-11523 B72-10675 09

Analysis of circuits including magnetic cores (MTRAC)
NPO-11494 B72-10724 02

Dynamic nonlinear analysis of shells of revolution (DYNASOR II)
JSC-14496 B73-10443 09

Frequencies and modes for shells of revolution (FAMSOR)
JSC-14497 B73-10444 09

The static nonlinear analysis of shells of revolution (SNASOR II)
JSC-14495 B73-10445 09

Computer program for numerical analysis of stiffened shells of revolution
M-FS-23027 B75-10094 09

NUMERICAL CONTROL

Fail-safe numerical control
M-FS-12613 B70-10522 02

A method of numerically controlled machine part programming
M-FS-15039 B70-10599 09

FORTAN 4 digital program changer
MSC-17567 B71-10448 09

NUMERICAL INTEGRATION

Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03

Separation of two bodies in space
NPO-10663 B70-10625 09

Single-level resonance parameters fit nuclear cross-sections
NUC-10101 B70-10686 03

Fast Mars communication geometry program
LANGLEY-10658 B71-10002 09

Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09

Errors in hybrid computers
M-FS-21289 B72-10141 02

Marshall system for aerospace simulation (MARSYAS)
M-FS-22672 B73-10432 09

Marshall vehicle-engineering simulation system (MARVES)
M-FS-21701 B75-10199 06

A study of accuracy in selected numerical-analysis integration techniques
MSC-14802 B75-10273 09

NUTATION

Fluoric-controller pneumatic stepping motor system

LEWIS-11051 B70-10332 02

Spin vector control of a spinning space station

M-FS-21333 B71-10296 09

Improved syncom-type fluid damper

GSFC-11205 B73-10478 06

A nondispersive infrared analyzer

ARC-10631 B75-10082 03

NUTRITION

Investigation to identify paint coatings resistive to microorganism growth

M-FS-20458 B71-10310 04

Potassium food supplement

JSC-14391 B73-10177 05

NUTRITIONAL REQUIREMENTS

A mathematical model of the effect of a predator on species diversity

NPO-11230 B70-10006 05

Metabolic balance analysis program

M-FS-21237 B71-10384 09

NUTS (FASTENERS)

Comparison of release torques of tightened bolts in vacuum and air

M-FS-20773 B70-10395 06

Special wrench for B-nuts reduces torque stress in tubing

MSC-15885 B70-10550 07

Electrothermal fracturing of tensile specimens

NUC-10185 B70-10566 07

Automatic, computerized testing of bolts

NPO-11090 B70-10657 06

Tool expedites installation of BNC connectors

ARC-10327 B71-10480 07

Joint preload properties of structural threaded fasteners

M-FS-21453 B71-10531 08

Specimen for high-temperature tensile tests

ARC-10531 B72-10028 04

Micro regulating ball valve

ARC-10295 B72-10121 06

Positive fast sealing union connections

LEWIS-11290 B72-10133 06

Perload indicating turnbuckle

M-FS-21488 B72-10355 07

NYLON (TRADEMARK)

High-field superconducting nested coil magnet

ARG-10060 B70-10061 03

An explosion-proof battery case

MSC-12335 B70-10304 01

Improved reinforcement for openings in difficult fabrics

MSC-13554 B70-10489 08

Medical vest broadens treatment capability

KSC-10577 B70-10529 05

Filled polymers for bearings and seals used in liquid hydrogen

LEWIS-10887 B70-10573 04

Rugged, low-conductance, heat-flow probe

MSC-13443 B70-10622 03

Miniature multicontact connectors

LANGLEY-10740 B70-10724 01

Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector

NPO-11504 B71-10131 03

A lightweight, high output soil sampler

NPO-10797 B71-10159 07

NASA-tricot - A lightweight radar

reflective, knitted fabric

LANGLEY-10776 B71-10342 04

Method of determining thermal conductivity in multi-layer insulation systems

M-FS-20213 B72-10154 03

Superior cryogenic insulation developed

M-FS-21560 B72-10187 04

NYQUIST DIAGRAM

Computerized polar plots by a cathode ray tube/grid overlay method

M-FS-14464 B70-10311 03

NYQUIST FREQUENCIES

Biomedical sensing and display concept improves brain wave monitoring

ERC-10233 B70-10447 05

O**O RING SEALS**

Quantitative conversion of water to carbon dioxide

NPO-10731 B70-10013 04

High pressure flow-rate switch

NPO-10722 B70-10028 07

Improved quick-disconnect electrical connector

M-FS-20610 B70-10109 01

Four-way, full-throttling valve concept

MSC-13437 B70-10165 07

Umbilical disconnect actuator

NPO-11202 B70-10170 07

Miniature spray-painting booth

MSC-15811 B70-10549 03

Bidirectional flow meter

M-FS-18737 B70-10589 07

Gage for measuring coastal erosion and sedimentation

LANGLEY-10779 B70-10629 01

Fluid slip ring transfers coolant to rotating equipment

MSC-13451 B71-10083 07

Ultrathin gate valve for high vacuum operation

GSFC-11028 B71-10412 07

High temperature autoclave vacuum seals

M-FS-21131 B71-10433 08

Hydraulic expansion process shapes large metal sheets

MSC-12432 B71-10511 07

Improved elastomer for use with oxygen difluoride

ARC-10528 B72-10027 04

High speed, self-acting, face-contact shaft seal has low leakage and very low wear

LEWIS-11598 B72-10114 07

Positive fast sealing union connections

LEWIS-11290 B72-10133 06

Fill and vent quick disconnect

M-FS-21822 B72-10645 07

Squib-operated disconnect

NPO-11330 B72-10713 06

Low-closing-force seal

ARC-10775 B73-10380 06

Container seal for dusty environment

LANGLEY-10962 B73-10416 07

Improved circumferential shaft seal
LEWIS-11873 B74-10062 07

OAO

Screening method improves performance of nickel-cadmium batteries

GSFC-11260 B71-10411 04

Algorithm for Liapunov stability analysis

ARC-10498 B72-10023 09

OBSIDIAN

Spectral emission measurement of igneous rocks using a spectroradiometer

M-FS-20837 B70-10661 04

OCCULTATION

Battery simulation program

NPO-11580 B71-10250 09

OCEAN BOTTOM

A lightweight, high output soil sampler

NPO-10797 B71-10159 07

Miniature sonar fish tag

LANGLEY-11814 B75-10092 02

OCEAN CURRENTS

Chebyshev minimax control theory

M-FS-20639 B70-10315 03

Simple and effective method to lock buoy position to ocean currents

M-FS-23140 B75-10095 06

Application of monochromatic ocean wave forecasts to prediction of wave-induced currents

LANGLEY-11809 B75-10226 03

OCEAN SURFACE

Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study

M-FS-20476 B71-10016 01

Remote determination of sea conditions by electromagnetic backscatter measurement

M-FS-13777 B71-10027 04

Application of monochromatic ocean wave forecasts to prediction of wave-induced currents

LANGLEY-11809 B75-10226 03

OCEANOGRAPHIC PARAMETERS

Application of monochromatic ocean wave forecasts to prediction of wave-induced currents

LANGLEY-11809 B75-10226 03

OCEANOGRAPHY

Solubility of non-polar gases in electrolyte solutions

LEWIS-11052 B70-10114 04

High-powered automatic latching device

MSC-15474 B70-10198 07

Increased resistance to stress corrosion of aluminum alloys

M-FS-20788 B70-10396 04

Reliability Analysis Model

M-FS-14513 B70-10614 09

Systems approach provides management control of complex programs

M-FS-20791 B70-10647 06

Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts

M-FS-20860 B71-10072 07

Unified hatch system

MSC-15813 B71-10095 06

Improved high-temperature metal-sheathed cables

NUC-10413 B71-10102 01

OCTAVES

Digital decorrelator saves time and expense in acoustic testing of structures

NPO-11542 B71-10157 03

OCULOMETERS

Eye-controlled "teletypewriter"
 LANGLEY-11564 B73-10514 02

ODORS

Miniature spray-painting booth
 MSC-15811 B70-10549 03

OFF-ON CONTROL

An electrothermally actuated micro valve
 NPO-10730 B70-10171 07
 Brushless direct-current motors
 NPO-11351 B70-10234 02
 High intensity heat-pulse source operates without cooling system
 ARC-10178 B70-10694 03
 Adaptive position control loop
 ARC-10255 B72-10052 02

OHMIC DISSIPATION

High current compensation network for dc logarithmic amplifiers
 NUC-10148 B71-10128 01
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01

OHMMETERS

Positive contact resistance soldering unit
 KSC-10242 B73-10145 02

OIL EXPLORATION

Swept-frequency UHF radiometer for deep probes of earth - A concept
 MSC-13428 B70-10617 02
 Improved dispensing targets for ion beam particle generators
 NPO-13112 B74-10108 03

OILS

High pressure flow-rate switch
 NPO-10722 B70-10028 07
 Hydrodynamic squeeze-film bearings for gyroscopes
 M-FS-20802 B70-10389 07
 Deadweight calibration of pressure gages without contamination
 M-FS-18690 B70-10586 07
 Metal drilling with portable hand drills
 M-FS-15180 B70-10594 08
 Optical contamination during thermal testing in vacuum
 M-FS-20736 B70-10659 03
 Improved high-temperature metal-sheathed cables
 NUC-10413 B71-10102 01
 Simple, shock-free, quick-release connector - A concept
 LEWIS-11178 B71-10146 07
 Wind tunnel investigations at transonic Mach numbers
 M-FS-20895 B71-10254 06
 Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 B71-10509 09
 Preventing oil migration in vacuum systems
 GSFC-11253 B72-10129 04
 Efficient baffle prevents oil backstreaming in diffusion pumps
 LRL-10025 B72-10475 07
 Improved method for reclaiming vacuum diffusion pump oil
 LEWIS-11647 B72-10511 04
 Preparation of stable colloidal dispersions in fluorinated liquids
 HQ-10580 B72-10529 04
 Optical detection of oil on water
 ARC-10649 B73-10268 03

OLIVINE

Spectral emission measurement of igneous rocks using a spectroradiometer
 M-FS-20837 B70-10661 04

OMNIDIRECTIONAL ANTENNAS

Analysis and optimization of an omnidirectional direction-finding system
 M-FS-14346 B70-10112 02
 Wide-angle, circularly polarized, omnidirectional-array antenna
 GSFC-10928 B71-10033 01
 Microwave dosimeter - A concept
 HQ-10407 B71-10075 01
 Aircraft-crash-locating transmitter features design improvements
 M-FS-16609 B71-10213 02
 A pseudo random-access synchronous meteorological satellite system
 GSFC-10895 B71-10220 02

ONE DIMENSIONAL FLOW

Computer program for compressible flow network analysis
 LEWIS-11859 B73-10246 09
 Computer program calculates quasi-one-dimensional flow across face seals and narrow slots
 LEWIS-11996 B73-10248 09

OPACIFIERS

Opacified fibrous thermal insulation
 LEWIS-11235 B71-10406 03

OPACITY

Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
 M-FS-21160 B71-10208 04
 Nematic liquid crystals for optical shutters: A concept
 NPO-11367 B72-10083 03

OPERATING TEMPERATURE

Thermally cascaded thermoelectric generator
 NPO-10753 B70-10280 03
 Common bearing material has highest fatigue life at moderate temperature
 LEWIS-11592 B72-10382 04

OPERATIONAL HAZARDS

Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
 KSC-10522 B70-10680 03
 Liquid and gaseous oxygen safety review
 LEWIS-12041 B73-10310 04

OPERATIONAL PROBLEMS

System availability management technique for reliability and maintainability analysis
 KSC-10315 B70-10063 09

OPERATIONS

Post-operative cranial pressure monitoring system
 ERC-10336 B70-10436 05

OPERATIONS RESEARCH

Mathematical techniques for estimating operational readiness of complex systems
 MSC-17694 B72-10335 09
 Safety management of a complex R&D ground operating system
 LEWIS-12559 B75-10241 07
 The Langley Research Center
 NASA/PERT TIME III
 LANGLEY-11887 B75-10302 09

OPERATOR PERFORMANCE

High mobility work station restraint support
 MSC-12419 B71-10301 07
 Restraint and locomotion aid
 ARC-10153 B72-10558 06

OPERATORS (PERSONNEL)

Hydraulic actuator motion limiter ensures operator safety
 ARC-10131 B71-10233 07
 Eye point-of-regard system
 ARC-10360 B71-10476 05

OPHTHALMOLOGY

Contact-eutectic-lens fabrication technique
 M-FS-23275 B75-10308 04

OPTICAL COMMUNICATION

COPTRAN - A method of optimum communication systems design
 ERC-10273 B70-10501 09
 Traveling-wave photodetector has sub-nanosecond response
 GSFC-10831 B70-10641 02
 Transmission of optical frequencies with minimal losses
 HQ-10541 B72-10389 03
 Efficient wire-grid duplexer-polarized for CO2 lasers
 GSFC-11403 B72-10440 03
 High-sensitivity receiver for CO2 laser communications
 GSFC-11455 B73-10223 02
 Dually-mode-locked ND: YAG laser
 GSFC-11746 B74-10038 03
 Dynamic polarization compensating system for optical communications receiver
 GSFC-11782 B74-10182 03
 Optical communication channel simulator system
 GSFC-11877 B74-10258 01
 Acoustically controlled integrated laser for communications systems
 NPO-13175 B75-10047 03
 Laser action generated within a light pipe: A concept
 NPO-13531 B75-10127 03
 Diffused guides for distributed-feedback lasers
 NPO-13544 B75-10206 03
 Optical feedback technique extends frequency response of photoconductors
 LANGLEY-11768 B75-10223 03
 Signal mixer for optical heterodyne receiver
 M-FS-23251 B75-10307 03

OPTICAL COUPLING

Neutron-image intensifier
 ARG-10249 B70-10240 03
 Optical enhancement of photomultiplier sensitivity
 ARC-10213 B71-10113 03

OPTICAL DATA PROCESSING

A generalized approach to computer synthesis of digital holograms
 M-FS-21973 B73-10101 09
 Recorder/processor apparatus
 GSFC-11553 B74-10042 03
 Data processing large quantities of multispectral information
 MSC-14472 B75-10080 03
 Laser scanned image sensors using photoconductors with deep traps
 NPO-13131 B75-10112 03
 Page composer to translate binary electrical data to optical form
 M-FS-22589 B75-10161 02
 Read-only optical storage medium
 M-FS-23169 B75-10305 03
 Optical-noise suppression unit: A concept
 MSC-12640 B75-10315 03

OPTICAL DENSITY

Improved discrimination in photographic density contouring
JSC-12588 B73-10441 03

OPTICAL EQUIPMENT

High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
Improved ultraviolet resonance lamp
ARC-10030 B70-10237 01
Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
Improved optical lens system
NPO-11311 B70-10354 03
Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03
Directional coupler for optical waveguides
ERC-10094 B70-10381 03
Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
Laser method for finding axis of rotation
ARC-10388 B70-10439 03
Ambient-light-absorbing screen for front projection
ERC-90017 B70-10472 03
Concept for high speed computer printer
KSC-10373 B70-10484 09
Ultraviolet interferometer
HQ-10546 B71-10026 03
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
Pattern recognition technique
NPO-11337 B71-10187 06
Laser vibration analyzer
XAC-01670 B71-10249 03
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Eye point-of-regard system
ARC-10360 B71-10476 05
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Optical alignment of electrodes on electrical discharge machines
XAC-09489 B72-10036 07
Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
A dual-beam actinic light source for photosynthesis research
ARC-10351 B72-10205 05
Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03
Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03
Roll function in a flight simulator
ARC-10557 B72-10417 02
Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04
Neutron radiographic viewing system
M-FS-22024 B72-10468 02

Particle detection with intensified laser beam
HQ-10645 B72-10516 03
Assessment of water pollution by airborne measurement of chlorophyll
ARC-10648 B72-10566 04
Oscillation of laser-beam intensity as observed with beam splitters
ARC-10694 B72-10572 03
Slitting flat conductor cables with the single cutting edge slit
M-FS-20111 B72-10575 07
A transmitting and reflecting diffuser for ultraviolet light
LANGLEY-10385 B72-10611 03
Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 B72-10665 03
Two-speed deflection system for electron micropattern generator
M-FS-22117 B72-10668 02
An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06
Measurement of dimensions and alignment with optical instruments
M-FS-22168 B73-10061 06
Light-direction sensor based on birefringency
NPO-11201 B73-10131 03
Linear kinematic air bearing
NPO-13151 B73-10456 06
Process for the production of star-tracking reticles
GSFC-11188 B73-10488 03
Miniaturized haploscope for testing binocular vision
ARC-10759 B73-10492 05
Stereoscopic television system
ARC-10160 B73-10499 02
True airspeed measured by airborne laser Doppler velocimeter
ARC-10763 B73-10506 02
Moisture-resistant coatings for optical components
ARC-10749 B73-10507 04
Inexpensive lightweight mirror
MSC-14615 B74-10155 05
Visual alignment aid
LANGLEY-11842 B75-10228 03
General optics evaluation program (GENOPTICS)
GSFC-12038 B75-10294 09

OPTICAL FILTERS

Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
Dual-wavelength system monitors deposition of films - A concept
M-FS-20675 B70-10658 03
Multispectral infrared imaging interferometer
MSC-12404 B71-10325 02
Solar experiment alignment system
ARC-10471 B72-10020 03
Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03
Improved optical filters for automated visual inspection
HQ-10720 B72-10521 03
Improved photographic prints with a linear radial transmission filter
LANGLEY-11221 B73-10242 03
Angular device for optical filters
LANGLEY-11796 B75-10158 03

Tunable diode laser spectrometer with integral grating
LANGLEY-11830 B75-10262 03

OPTICAL HETERODYNING

Laser-Doppler gas velocimeter
M-FS-20583 B70-10143 02
COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
Laser vibration analyzer
XAC-01670 B71-10249 03
Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03
Laser velocimeter with transverse and on-axis sensitivity
ARC-10642 B73-10262 03
Signal mixer for optical heterodyne receiver
M-FS-23251 B75-10307 03

OPTICAL MEASUREMENT

Picosecond pulse measurement by two-photon excitation of photographic film
ERC-10227 B70-10377 02
Dual-wavelength system monitors deposition of films - A concept
M-FS-20675 B70-10658 03
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Vibration detection using lasers
ARC-10389 B71-10145 03
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
Optical design and analysis program
GSFC-11393 B71-10456 09
Wavelength-selective, sequential Q-switching laser cavity
LANGLEY-11045 B74-10134 03
Developments in spectrophotometry I: An instrument for high-resolution measurements of optical intensity and polarization
NPO-13604 B75-10332 03
Developments in spectrophotometry II: A multiple-frequency particle-size spectrometer
NPO-13606 B75-10333 03
Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
NPO-13614 B75-10335 03

OPTICAL MEASURING INSTRUMENTS

Slide checkout console
MSC-12318 B70-10290 02
Quasi-optical equivalent of waveguide slide screw tuner
ERC-10312 B70-10384 01
Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07
Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03

- Optical monitoring system
M-FS-21692 B73-10050 03
Measurement of dimensions and alignment with optical instruments
M-FS-22168 B73-10061 06
Real time optical figure sensor
M-FS-22123 B73-10169 02
- OPTICAL MICROSCOPES**
Alignment microscope for rotating laser scanner
MSC-14118 B72-10435 03
Automatically-focusing microscope system for live tissue observation
NPO-13215 B75-10048 03
- OPTICAL PATHS**
Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03
- OPTICAL POLARIZATION**
Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Efficient wire-grid duplexer-polarized for CO₂ lasers
GSFC-11403 B72-10440 03
- OPTICAL PROPERTIES**
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Holographic photography of high velocity particles
ERC-10318 B70-10371 03
Improved linings for integrating spheres
MSC-12237 B70-10413 03
Ambient-light-absorbing screen for front projection
ERC-90017 B70-10472 03
Less-expensive Rochon prisms
M-FS-20554 B70-10681 03
Performance of silicon solar cell assemblies
NPO-11847 B72-10186 01
A sensitive image intensifier which uses inert gas
LRL-10024 B72-10312 03
Transmission of optical frequencies with minimal losses
HQ-10541 B72-10389 03
A transmitting and reflecting diffuser for ultraviolet light
LANGLEY-10385 B72-10611 03
A bi-stable optical device
HQ-10701 B72-10655 03
Parallel-plate viscometer
NPO-11387 B72-10700 03
Improved zinc oxide thermal control coatings
NPO-11139 B72-10711 04
A new optical recording medium
M-FS-22348 B73-10095 03
Wide-field birefringent elements
MSC-12677 B75-10105 03
- OPTICAL PUMPING**
A laser head for simultaneous optical pumping of several dye lasers
LANGLEY-11341 B73-10336 03
- OPTICAL PYROMETERS**
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03
- Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
- OPTICAL RADAR**
High-accuracy detector for laser radar
MSC-13275 B70-10570 01
Atmospheric temperature measurements by Raman laser scattering
LEWIS-12065 B73-10251 03
Binary-selectable detector holdoff circuit
M-FS-22898 B73-10487 02
- OPTICAL REFLECTION**
Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03
Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03
Measurement of X-ray scattering by optical surfaces
GSFC-11590 B73-10283 03
Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
GSFC-11860 B73-10516 03
Surface roughness measured by optical signatures
ARC-10853 B74-10118 03
Microbial load monitor
MSC-14062 B75-10167 05
- OPTICAL RESONANCE**
High temperature ion source
ERC-10197 B70-10379 03
- OPTICAL SCANNERS**
Kaleidoscopic light feedback for television systems
MSC-12386 B71-10068 03
Solid-state data interpretation system - A concept
M-FS-20587 B71-10366 02
Wide-field reflective scanning optical systems
JSC-14096 B73-10279 03
Laser scanner for testing semiconductor chips
M-FS-22693 B73-10327 02
Stereoscopic television system
ARC-10160 B73-10499 02
Laser-scanning techniques for rapid ballistics identification
NPO-11861 B74-10102 03
Fast signal averager
ARC-10090 B74-10109 02
Coaxial, self-aligning optical scanning system
LANGLEY-11711 B75-10034 03
- OPTICAL THICKNESS**
Improving laser beam coherence - A concept
ARC-10417 B71-10527 03
Unsupported thin film beam splitter
GSFC-10525 B72-10471 02
- OPTICAL TRACKING**
Atmospheric density variations related to internal gravity waves
M-FS-21637 B72-10143 03
Laser system detects tower deflections
LEWIS-11870 B73-10243 02
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03
Viewfinder/tracking system for Skylab
MSC-14407 B75-10040 03
- OPTICS**
Colloid technique of mirror cleaning
LANGLEY-10675 B70-10463 04
Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 B70-10568 05
Radiant energy absorption enhancement in optical imaging systems
ARC-10194 B71-10112 03
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Hand-held photomicroscopy system
ARC-10468 B72-10190 03
Projections of scan patterns on human retina
ARC-10181 B72-10193 05
Fine guidance for a spaceborne telescope
GSFC-11487 B73-10468 03
- OPTIMAL CONTROL**
Method of statistical filtering
MSC-13493 B70-10427 06
Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
Global search algorithm for optimal control
ARC-10359 B70-10637 09
Closed-loop control of stochastic nonlinear systems
MSC-13858 B71-10306 09
Elements of orbit-determination theory - Textbook
NPO-11466 B71-10425 03
- OPTIMIZATION**
New model performance index for engineering design of control systems
HQ-10520 B70-10293 06
Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
Multiloop distributed RC active networks
ARC-10200 B71-10177 01
Criteria for vibration testing
GSFC-10737 B71-10266 06
Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 B71-10357 03
Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
New procedure for determining minimum time orbit transfers
M-FS-14804 B71-10376 09
Computer program optimizes design of nuclear radiation shields
LEWIS-10998 B71-10400 09
Planet geometric center tracker
ARC-10084 B71-10445 02
Graphical method for analyzing digital computer efficiency
ARC-10210 B71-10453 09
Optimization technique for problems with an inequality constraint
ARC-10522 B72-10222 09
Properties of ionization breakdown of air at microwave frequencies and optimization of component dimensions for maximum microwave power
M-FS-21924 B72-10316 01

OPTIONS

- Design criteria monograph on turbopump inducers
LEWIS-11824 872-10635 08
- An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 872-10644 08
- Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 872-10722 06
- Optimizing designs of two-level factorial experiments given partial prior information (NAMER)
LEWIS-11708 872-10726 09
- A summary report on system effectiveness and optimization study
M-FS-22126 873-10104 09
- Optimization of structures on the basis of fracture mechanics and reliability criteria
NPO-11645 873-10276 06
- Minimization search method for data inversion
NPO-99999 875-10338 09
- OPTIONS**
- Neutron ages computed from experimental activation data
LEWIS-10949 870-10557 09
- Time Data Sequential Processor /TDSP/
NPO-11327 870-10720 09
- OPTOMETRY**
- Automatic optometer operates with infrared test pattern
ARC-10095 870-10401 05
- Miniaturized haploscope for testing binocular vision
ARC-10759 873-10492 05
- ORBIT CALCULATION**
- Orbit, reentry, and landing attachment for globes
LANGLEY-10626 870-10656 03
- Elements of orbit-determination theory - Textbook
NPO-11466 871-10425 03
- ORBIT PERTURBATION**
- Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 870-10442 03
- N-body U and K matrix program
LEWIS-11438 873-10012 09
- ORBITAL MECHANICS**
- Time Data Sequential Processor /TDSP/
NPO-11327 870-10720 09
- Fast Mars communication geometry program
LANGLEY-10658 871-10002 09
- ORBITRONS**
- An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 870-10611 03
- ORBITS**
- Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 871-10151 09
- ORGANIC CHEMISTRY**
- Improved thermally conducting electron transfer polymers
GSFC-11304 872-10291 04
- Polyimide foams provide thermal insulation and fire protection
ARC-10464 872-10300 04
- Synthesis of temperature and solvent-resistant polymers
M-FS-20848 872-10342 04

- Thermally resistant polymers for fuel tank sealants
M-FS-21232 872-10358 04
- Polymeric binder for explosives
AEC-10062 872-10366 04
- Bondability of RTV silicon rubber
AEC-10026 872-10367 04
- Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 872-10451 04
- Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 872-10473 04
- A new intermediate for the production of flexible stable polymers
M-FS-22355 873-10080 04
- ORGANIC COMPOUNDS**
- Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 870-10285 04
- A new metalation complex for organic synthesis and polymerization reactions
NPO-10313 871-10210 04
- Effects of the thermal sterilization procedure on polymeric products
NPO-11688 871-10362 04
- A method of isolating organic compounds present in water
AEC-10010 872-10044 04
- Initiation of polymerization by tetrabutylammonium p-lithiophenoxide
ARC-10553 872-10223 04
- Improved thermally conducting electron transfer polymers
GSFC-11304 872-10291 04
- Polymeric binder for explosives
AEC-10062 872-10366 04
- Bondability of RTV silicon rubber
AEC-10026 872-10367 04
- Gas chromatography of volatile organic compounds
JSC-14428 873-10406 04
- Detection of cracks in surface insulation
MSC-14187 874-10095 04
- ORGANIC LIQUIDS**
- Radiochemical synthesis of pure anhydrous metal halides
LEWIS-11860 873-10407 04
- Determination of water content using mass spectrometry
LANGLEY-11774 875-10157 04
- ORGANIC LITHIUM COMPOUNDS**
- A new metalation complex for organic synthesis and polymerization reactions
NPO-10313 871-10210 04
- ORGANIC MATERIALS**
- Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 870-10285 04
- Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 870-10540 04
- New type of nonflammable paper
MSC-13432 870-10546 04
- Composite casting demonstration
M-FS-21668 872-10266 04
- Synthesis of temperature and solvent-resistant polymers
M-FS-20848 872-10342 04
- Purification of contaminated water by filtration through porous glass
ARC-10655 872-10412 04

SUBJECT INDEX

- Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 872-10445 08
- Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 874-10154 04
- New tooth enamel from brushite crystals
ERC-10338 874-10199 05
- ORGANIC NITRATES**
- Negative ion spectrometry for detecting nitrated explosives
NPO-13082 874-10276 02
- ORGANOMETALLIC COMPOUNDS**
- Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 870-10194 08
- Proposed semiconductor film improvement
HQ-10685 872-10438 04
- ORGANOMETALLIC POLYMERS**
- Semi-organic structural adhesive for aluminum
M-FS-21328 873-10071 04
- ORGANS**
- Improved ultrasonic biomedical measuring apparatus
ARC-10597 872-10695 05
- ORIENTATION**
- LEAPS (Laser electro-optical alignment pole for surveying)
GSFC-11262 873-10122 02
- Spacecraft attitude determination by fanscan technique
ARC-10827 874-10198 02
- ORIFICE FLOW**
- Discharge coefficients for thick-plate orifices
LEWIS-11067 870-10062 06
- Prediction of gas leakage of environmental control systems
HQ-10270 870-10201 05
- Simplified computation of compressible fluid flow parameters
KSC-10400 870-10225 06
- Precision control system for engine fuel
NPO-12017 870-10244 07
- A temperature-controlled fluid flow regulator
M-FS-14259 870-10283 07
- Hydraulic characteristics of flow through miniature slits
NPO-11354 870-10400 07
- Bidirectional flow meter
M-FS-18737 870-10589 07
- Pneumatic amplifier controls high pressure fluid supply
MSC-12121 871-10081 07
- Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 872-10117 07
- ORIFICES**
- Adjustable flow restrictor
MSC-13433 870-10037 07
- Investigation of positive shaft seals
M-FS-18589 870-10176 07
- Novel wave generator adaptable to indoor surfing
LEWIS-11096 870-10563 03
- Low leak rate poppet-and-seat check valve
MSC-13587 870-10688 07
- Spray momentum measuring system
MSC-12305 871-10137 05

- Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 B71-10173 07
Variable-area nozzle automatically controls fluid flow
LEWIS-11217 B71-10222 07
Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
Low cost, logarithmic mass flow computer
LEWIS-11001 B71-10407 06
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
Proportional pulsed pilot valve
ARC-10228 B71-10468 07
Measuring internal dimensions of small transparent objects
LANGLEY-10712 B71-10505 08
Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09
Anemometer calibrator
M-FS-21424 B71-10519 03
Pressure sensitive gas flow meter
ARC-10219 B72-10049 06
Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07
Micro regulating ball valve
ARC-10295 B72-10121 06
An economical vent cover
M-FS-20692 B72-10348 07
- ORTHICONS**
Neutron-image intensifier
ARG-10249 B70-10240 03
Improved optical lens system
NPO-11311 B70-10354 03
- ORTHOGONAL FUNCTIONS**
Dual-frequency feed-horn antenna
GSFC-10820 B71-10056 02
Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
- ORTHOGONALITY**
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
Optical bonding agents for severe environments
ARC-10459 B72-10063 04
- ORTHONORMAL FUNCTIONS**
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
- ORTHOPEDICS**
Improved orthopedic arm joint
M-FS-21611 B71-10485 05
DC motor proportional control system for orthotic devices
M-FS-21573 B72-10617 05
Therapeutic hand-exercising device with cycling pressure valve
LANGLEY-11579 B74-10140 05
Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 B75-10148 05
Lightweight orthotic braces
LANGLEY-11894 B75-10303 05
- ORTHOTROPIC CYLINDERS**
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
- ORTHOTROPIC PLATES**
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
- ORTHOTROPIC SHELLS**
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09
Computer program for numerical analysis of stiffened shells of revolution
M-FS-23027 B75-10094 09
- ORTHOTROPISM**
Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
- OSCILLATING FLOW**
Controlled droplet spray generator
LEWIS-11193 B70-10652 07
Microresonator for damping flow oscillations
M-FS-18401 B72-10105 06
- OSCILLATION DAMPERS**
Microresonator for damping flow oscillations
M-FS-18401 B72-10105 06
Improved syncom-type fluid damper
GSFC-11205 B73-10478 06
Swashplate feedback control for tilt-rotor aircraft
ARC-10854 B74-10174 06
- OSCILLATIONS**
Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
Thermally induced oscillations in fluid flow
M-FS-20449 B70-10299 03
Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
Wall attachment, fluoric crossover "AND" gate
XLA-07391 B71-10178 07
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
- Vibrating ribbon bolometer: A concept
XAC-10768 B72-10170 03
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Control of oscillations in a discharge circuit
ARC-10556 B72-10304 01
A voltage-tunable three-terminal Gunn device
HQ-10783 B72-10518 01
Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06
- OSCILLATORS**
Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
Telemetry receiver
NPO-10746 B70-10008 02
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
High-resolution spectral analysis
NPO-10748 B70-10039 01
Ranging code processor
NPO-10066 B70-10060 02
Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05
Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01
Burst synchronization detection system
MSC-90317 B70-10159 02
A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
Simplified method for measuring the impedance of RF power sources - A concept
NPO-10734 B70-10212 02
Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
Constant-amplitude RC oscillator
ARC-10262 B70-10338 01
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02
Control system for an artificial heart
LEWIS-11057 B70-10469 05
Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
Metal detector system
ARC-10265 B70-10511 01
Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02

OSCILLOGRAPHS

SUBJECT INDEX

Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02

Intruder detection system
ARC-10097 B70-10638 02

Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01

Wein bridge oscillator circuit
MSC-13686 B71-10089 01

Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02

A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02

Voltage-controlled oscillator
ARC-10078 B71-10171 01

A 20 kHz power oscillator
LEWIS-11319 B71-10174 01

Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01

Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02

Catheter transducer and circuit
ARC-10132 B71-10234 01

Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03

Laser vibration analyzer
XAC-01670 B71-10249 03

Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02

Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 B71-10275 01

Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01

Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01

Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03

Double phase-lock loop with rapid transient response - A concept
GSFC-10864 B71-10349 01

Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03

Externally programmed variable timer
M-FS-20776 B71-10437 04

Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06

Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05

Improved device measures performance of batteries under load
ARC-10252 B72-10051 02

Frequency switch keyed oscillator
ARC-10412 B72-10124 01

Heart simulator
M-FS-21609 B72-10131 02

Fluidic ignition detection
M-FS-21498 B72-10158 06

Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05

Very high speed direct-readout, control and recording system
M-FS-20658 B72-10442 02

Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02

A voltage-tunable three-terminal Gunn device
HQ-10783 B72-10518 01

A compact battery powered digital thermometer
MSC-14084 B72-10545 02

Remote measurement of the water content of snowpacks
ARC-10651 B72-10567 03

Oscillating hot-wire anemometer
NPO-11634 B72-10609 02

Active tuning circuit
GSFC-11340 B73-10334 02

Ankylosis-stabilized oscillator
GSFC-11513 B73-10392 02

Minicomputer-controlled frequency generator
NPO-11962 B74-10163 02

Transmission Oscillator Ultrasonic Spectrometer (TOUS): A new research instrument
LANGLEY-11735 B75-10035 03

One-dimensional multimode and multistate oscillator: A concept
HQ-10851 B75-10088 01

Temperature-stable Gunn-diode oscillator
M-FS-23242 B75-10306 01

Signal mixer for optical heterodyne receiver
M-FS-23251 B75-10307 03

Trigger circuit forces immediate synchronization of free-running oscillator
NPO-13646 B75-10337 01

OSCILLOGRAPHS

Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06

Parallel-plate viscometer
NPO-11387 B72-10700 03

OSCILLOSCOPES

Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05

A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01

Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03

High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01

Acoustic vibration test detects intermittent electrical discontinuities
MSC-15158 B70-10118 01

Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02

Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01

A battery simulator
KSC-10172 B70-10340 01

Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08

Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay
ARG-10281 B70-10608 03

Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02

Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06

Automatic cross-sectioning and monitoring system locates defects in electronic devices
GSFC-11221 B71-10221 01

Solar cell power scanner
LEWIS-11280 B71-10223 02

Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03

A real-time statistical time-series analyzer
MSC-12428 B71-10276 02

Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03

Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01

Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03

Improved system for measuring speed of rotating machinery
ARC-10413 B72-10179 07

Simple non-destructive tests for electroexplosive devices
NPO-11563 B72-10315 01

Optical device for producing color line scan display from monochrome oscilloscope traces
LANGLEY-10896 B72-10375 03

Simple turbine balancing test apparatus
LEWIS-11658 B72-10377 07

Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01

Wideband wattmeter for instant measurement of real power
LEWIS-11698 B72-10737 01

Digital video display system
NPO-11342 B73-10132 02

Alphanumeric character generator for oscilloscope
GSFC-11582 B73-10370 02

OSMIUM

Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 B70-10233 04

OSMOSIS

Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04

Water purification by reverse osmosis using heterocyclic polymer membranes
LANGLEY-10514 B72-10230 04

Stabilization of porous glass reverse-osmosis membranes
ARC-10646 B72-10309 04

Rapid evaluation of reverse-osmosis membranes
ARC-10659 B72-10413 04

Reverse-osmosis membranes by plasma polymerization
ARC-10696 B72-10710 04

Domestic wash water reclamation
LANGLEY-11606 B74-10177 04

Using permeable membranes to produce hydrogen and oxygen from water
MSC-12600 B75-10314 04

OUTER PLANETS EXPLORERS

Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03

OUTGASSING

Dopant for sodium niobate capacitor dielectric
MSC-11773 B70-10190 01
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04
Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 B70-10612 04
Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04
Optical bonding agents for severe environments
ARC-10459 B72-10063 04
Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
Baffle to confine glow discharge in ion pump
M-FS-21575 B72-10324 03
Nongassing NiCd battery cell
NPO-11853 B75-10174 04

OUTLETS

Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Concept for a gas operated actuator
NPO-11340 B70-10516 07
High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07
Cryogenic gel flow viscometer
ARC-10523 B72-10180 03

OUTPUT

Antenna-array, phase quadrature tracking system
MSC-12205 B70-10095 02
Audio signal processor
MSC-12223 B70-10180 01
Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
Silicon solar cells improved by lithium doping
NPO-11390 B70-10585 04
Digital-voltage curve generator
NPO-11104 B70-10590 02
Biomedical recording system
MSC-13653 B70-10697 05
Digital simulation program improved
M-FS-01504 B70-10705 09
Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01

Miniature fuel cells relieve gas pressure in sealed batteries

XGS-11370 B71-10064 02
Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 B71-10069 01
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01
Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
A lightweight, high output soil sampler
NPO-10797 B71-10159 07
Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01
Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02
Voltage-controlled oscillator
ARC-10078 B71-10171 01
A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
Wall attachment, fluoric crossover "AND" gate
XLA-07391 B71-10178 07
Accumulative weights program
M-FS-15066 B71-10181 09
Pattern recognition technique
NPO-11337 B71-10187 06
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
Efficient digital comparison technique for logic circuits
M-FS-21080 B71-10218 02
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09
A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01
Voltage regulator dissipates minimal power and functions as a voltage divider
B71-10367 01
Externally programmed variable timer
M-FS-20776 B71-10437 04
Planet geometric center tracker
ARC-10084 B71-10445 02
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Automated preventive maintenance program
GSFC-11408 B71-10500 09
Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 B71-10517 02
Third order digital-to-analog converter
MSC-12458 B72-10030 02

A differential ECG amplifier with single-ended output
ARC-10411 B72-10061 05
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
A manually set magnetic wire counter
AEC-10039 B72-10369 01
Universal dc signal conditioner
MSC-17526 B72-10510 02
An improved learning decoder
MSC-14070 B72-10573 02

Ovens

Economic gas chromatograph system for subambient pressure gas sampling
M-FS-16298 B70-10220 02
Oven temperature controller for electronic components
GSFC-11466 B73-10052 02

OVERPRESSURE

Improved burst disk/cutter assembly
KSC-10516 B70-10583 07
An unconfined, large-volume hydrogen/air explosion
NUC-11000 B71-10041 03
Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06

OVERVOLTAGE

Photomultiplier blanking circuit
ARC-10593 B72-10561 01
A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
LEWIS-12109 B75-10068 02
Response of tantalum capacitors to fast transient overvoltages
MSC-14822 B75-10274 01

OXALATES

Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04

OXIDATION

Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
HQ-10565 B70-10035 01
Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04
Foaming-electrolyte fuel cell
HQ-10147 B70-10097 01
Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04
Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 B70-10475 04
The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04

OXIDATION RESISTANCE

Hydrogen eliminator
ARC-10408 B72-10208 03

Metabolic simulation chamber
HQ-10776 B72-10658 05

In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04

OXIDATION RESISTANCE

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04

Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 B70-10210 04

High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08

High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08

Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01

High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04

Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04

Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04

Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04

New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04

A protective coating for stainless steel
LEWIS-11267 B72-10256 04

Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04

Oxidation resistant, thorium-dispersed nickel-chromium-aluminum alloy
LEWIS-11541 B73-10077 04

Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04

Polyimide fiber-glass composite resists high temperatures
ARC-10782 B73-10505 04

Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04

Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 B75-10246 04

OXIDES

Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08

High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08

Fabrication of electroacoustic RF amplifiers
ERC-10266 B70-10460 01

Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03

Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08

Electroplating on titanium alloy
M-FS-21251 B71-10338 08

Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01

A study of nitride devices for computer memory applications
M-FS-20971 B71-10350 03

Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04

Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08

Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03

Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04

Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
M-FS-21113 B72-10321 04

High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04

Boron-10 loaded inorganic shielding material
M-FS-22280 B72-10740 04

OXIDIZERS

Determination of nitrogen in titanium nitride
LEWIS-11046 B70-10588 04

Combination throttle and shutoff valve
M-FS-21513 B72-10287 07

Remote control flare stack igniter for combustible gases
M-FS-21675 B72-10352 07

Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04

Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07

OXIMETRY

Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05

OXYACETYLENE

Method for evaluating effectiveness of dry fire-extinguishing chemicals
ARC-10869 B75-10027 04

OXYGEN

Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05

Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01

Gas flowmeter
M-FS-20663 B70-10050 07

Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01

Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 B70-10094 04

SUBJECT INDEX

Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04

Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03

Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03

Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05

Progress in research on chlorate candle technology
MSC-13409 B70-10258 04

An explosion-proof battery case
MSC-12335 B70-10304 01

Controlled etching of printed-circuit boards
XGS-06306 B70-10327 04

Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 B70-10333 04

Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03

Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 B70-10540 04

Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07

Resonance tube igniter
LEWIS-11219 B70-10618 04

Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02

Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04

Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04

Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01

Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07

Technique for in-place welding of aluminum backed up by a combustible material
LEWIS-11328 B71-10257 08

Compressed gas handbook
KSC-10662 B71-10272 03

New method speeds body inert gas saturation and utilizes surface decompression
MSC-13543 B71-10330 05

Metabolic balance analysis program
M-FS-21237 B71-10384 09

Anemometer calibrator
M-FS-21424 B71-10519 03

Oxygen pressure control for electrolysis cells
ARC-10250 B72-10074 02

Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03

Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 B72-10127 03

SUBJECT INDEX

Fluidic ignition detection
M-FS-21498 B72-10158 06
Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
Simple gas chromatographic system for
analysis of microbial respiratory gases
ARC-10403 B72-10207 03
Hydrogen eliminator
ARC-10408 B72-10208 03
Counter lung
ARC-10248 B72-10219 05
Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
Polymeric coatings using electronic
excitation
HQ-10698 B72-10257 04
Oxygen reclamation with solid oxide
electrolytes
ARC-10487 B72-10273 03
Balanced-bellows spirometer
XAC-01547 B72-10279 05
Titanium alloy stress corrosion cracking
in presence of dinitrogen tetroxide
M-FS-21113 B72-10321 04
Nonflammable potting, encapsulating
and/or conformal coating compound
MSC-13499 B72-10337 04
Failure in glass
AEC-10088 B72-10364 04
Evaluating foam heterogeneity
AEC-10046 B72-10365 04
Metered oxygen supply aids treatment
of domestic sewage
ARC-10024 B72-10557 05
Propulsion sizing program
MSC-14016 B72-10605 09
Breathing-metabolic simulator
HQ-10766 B72-10657 05
Metabolic simulation chamber
HQ-10776 B72-10658 05
An efficient prebreathing apparatus for
humans during decompression
MSC-14151 B72-10690 05
Gettering capsule for removing oxygen
from liquid lithium systems
LEWIS-11509 B73-10002 04
Filament winding technique produces
strong lightweight oxygen tanks
M-FS-22470 B73-10082 08
Handbook on thermophysical properties
of oxygen
LEWIS-11962 B73-10187 04
Handbook of cleaning requirements,
procedures, and verification techniques for
oxygen systems
LEWIS-11963 B73-10188 04
Liquid and gaseous oxygen safety
review
LEWIS-12041 B73-10310 04
An equation of state for oxygen and
nitrogen
JSC-14465 B73-10394 04
A methanol/air fuel cell system
M-FS-22541 B73-10472 07
Transfer of gaseous oxygen from
high-pressure containers and the
Joule-Thomson inversion
KSC-10721 B73-10483 04
Lead-oxygen closed-loop battery system
M-FS-23059 B74-10267 06
Flammability study of materials in oxygen
environments
M-FS-23306 B75-10310 04
OXYGEN ANALYZERS
Thin film devices used as oxygen partial
pressure sensors
XLA-06473 B70-10419 04

Ear oximeter-transducer monitors four
physiological responses
XAC-05422 B72-10224 05
A continuous physiological data
collector
M-FS-20835 B72-10402 05
Rapid detection of bacteria in foods and
biological fluids
GSFC-11738 B73-10045 05
Oxygen sensitive paper
M-FS-22354 B73-10103 04
Calibration of dissolved oxygen standard
for analysis with methylene blue
M-FS-22353 B73-10147 04
OXYGEN BREATHING
Metabolic breath analyzer
M-FS-21415 B71-10466 05
Aircrew oxygen system
ARC-10247 B72-10195 05
Ultrastructural alteration of mouse lung
by prolonged exposure to mixtures of
helium and oxygen
ARC-10929 B75-10061 05
OXYGEN COMPOUNDS
Polymer containing functional end groups
is base for new polymers
NPO-10998 B71-10184 04
Improved intensifying screen reduces
X-ray exposure
AEC-10090 B72-10232 03
OXYGEN CONSUMPTION
Improved temperature control of liquid
cooling garments
MSC-13917 B72-10281 05
OXYGEN FLUORIDES
Preparation of fine-particles at cryogenic
temperatures
NPO-10250 B70-10182 04
Improved elastomer for use with oxygen
difluoride
ARC-10528 B72-10027 04
Oxygen carrier for gas chromatographic
analysis of inert gases in propellants
ARC-10574 B72-10249 04
Thermal control for storage of cryogenic
propellants in a common-bulkhead tank:
A concept
ARC-10558 B72-10276 03
OXYGEN PRODUCTION
Oxygen reclamation with solid oxide
electrolytes
ARC-10487 B72-10273 03
Catalyst for sodium chlorate
decomposition
ARC-10584 B72-10305 04
Spacecraft oxygen recovery system
ARC-10868 B74-10220 05
Using permeable membranes to produce
hydrogen and oxygen from water
MSC-12600 B75-10314 04
OXYGEN REGULATORS
Aircrew oxygen system
ARC-10247 B72-10195 05
OXYGEN SUPPLY EQUIPMENT
Progress in research on chlorate candle
technology
MSC-13409 B70-10258 04
Aircrew oxygen system
ARC-10247 B72-10195 05
Controlled flow assembly
M-FS-21716 B72-10404 07
Artificial atmosphere control system
M-FS-22159 B73-10089 05
Oxygen cocoon for patients under
intensive care
MSC-12663 B75-10079 05

P-TYPE SEMICONDUCTORS

OXYHALIDES
Chemical treatment makes aromatic
polyamide fabric fireproof in oxygen
atmosphere
MSC-13571 B70-10540 04
OZONE
Atmospheric pollution measurement by
optical cross correlation methods - A
concept
M-FS-12078 B71-10224 02
P
P-I-N JUNCTIONS
P-I-N diode switch
GSFC-10661 B70-10278 01
Increasing the response of PIN
photodiodes to the ultraviolet
ARC-10274 B72-10053 03
P-N JUNCTIONS
Improved silicon solar cells
LEWIS-10964 B70-10029 01
Inorganic bonding of semiconductor
strain gages
GSFC-10833 B70-10215 08
Visible light electroluminescent diodes of
indium-gallium phosphide
ERC-10303 B70-10474 01
P-n junctions formed in gallium
antimonide
ERC-10302 B70-10500 01
Improved methods of forming monolithic
integrated circuits having complementary
bipolar transistors
LANGLEY-10358 B71-10035 01
Environmental effects on silicon solar
cells
NPO-11475 B71-10282 02
Oxygen-layer structure improves
lithium-doped silicon solar cells
NPO-11403 B72-10085 03
Introduction of lithium into the front
surface of solar cells
NPO-11404 B72-10086 02
A voltage-tunable three-terminal Gunn
device
HQ-10783 B72-10518 01
Improved photovoltaic devices, using
transparent contacts
LANGLEY-11761 B75-10220 01
P-N-P JUNCTIONS
Low power NAND gate
M-FS-14487 B70-10203 01
Technique for producing bipolar and MOS
field effect transistors on a single chip
MSC-13358 B70-10218 01
Improved methods of forming monolithic
integrated circuits having complementary
bipolar transistors
LANGLEY-10358 B71-10035 01
Overlap diffusion for increasing
phototransistor dynamic range
M-FS-20407 B72-10347 01
P-TYPE SEMICONDUCTORS
Solid state switch provides high
input-to-output isolation
HQ-10488 B70-10022 01
Improved solid state
electron-charge-storage device
HQ-10152 B70-10074 01
Technique for producing bipolar and MOS
field effect transistors on a single chip
MSC-13358 B70-10218 01

Integrated circuit random-access memory decoder
 ERC-10211 B70-10372 01
 Low-power integrated-circuit driver for ferrite-memory word lines
 ERC-10212 B70-10374 09
 Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10256 B70-10444 04
 Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10277 B70-10445 03
 Growth of single-crystal gallium nitride
 ERC-10301 B70-10473 03
 Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
 LANGLEY-10358 B71-10035 01
 Optimum doping achieves high quantum yields in GaAs photoemitters
 M-FS-20962 B71-10357 03
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01
 Integrated p-channel MOS gyrator
 M-FS-22343 B73-10217 02
 Efficiency increased in new solar cell: A Concept
 LANGLEY-11174 B74-10090 01

PACKAGES

Subroutines for evaluating single and multiple integrals using modified Romberg method
 NPO-11718 B71-10138 09
 Multifunction audio digitizer for communications systems
 MSC-13855 B71-10318 02
 Guidelines for fabrication of hybrid microcircuits
 M-FS-21964 B72-10393 01

PACKAGING

Integrated circuit flat-pack lead bender
 MSC-13489 B70-10117 01
 Glass-to-metal bonding process improves stability and performance of semiconductor devices
 ERC-10264 B70-10477 01
 Ceramic wiring board increases packaging density of electronic modules
 MSC-13497 B71-10084 01
 High density electronic packaging module with improved cooling assembly
 MSC-13639 B71-10088 01
 Foldable patterns form construction blocks
 MSC-13860 B71-10523 08
 Speed enhancement of complementary MOS devices
 ARC-10387 B72-10184 01
 Phase-change materials handbook
 M-FS-22064 B72-10464 04
 Hermetic-coaxial package design for microwave transistors
 GSFC-10791 B73-10427 01
 Toroidal equipment packaging
 ARC-10828 B74-10055 03

PACKING

Color-coded area sensitivity maps of photomultipliers
 LANGLEY-10320 B74-10259 01

PACKING DENSITY

Digital decoder for phase-delay coded data
 GSFC-10894 B71-10345 01

PACKINGS (SEALS)

Hot tap thermowell installation
 MSC-12427 B71-10302 07
 Ultrathin gate valve for high vacuum operation
 GSFC-11028 B71-10412 07
 Leak decay method of helium bombardment leak testing
 M-FS-24109 B72-10381 06
 High-speed, self-acting shaft seal (circumferential type)
 LEWIS-11274 B72-10447 07
 Computer program for calculating the temperature field of face seals
 LEWIS-11110 B72-10483 09
 Improved silver-zinc battery-terminal seals
 LEWIS-11615 B72-10581 06
 Improved lip seal for rotating shafts
 LEWIS-11602 B72-10672 07

PAINTS

Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03
 Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04
 Miniature spray-painting booth
 MSC-15811 B70-10549 03
 Potassium silicate-zinc oxide solution for metal finishes
 GSFC-10361 B70-10600 04
 Nonflammable organic-base paint for oxygen-rich atmospheres
 M-FS-20486 B71-10077 04
 Improved thermal paint formulation
 M-FS-14706 B71-10180 03
 Teardown analysis for detecting shelf-life degradation
 M-FS-24017 B71-10195 04
 Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04
 Estimating carbon monoxide exposure
 MSC-17211 B71-10319 04
 Devolatilization of polymer resins
 GSFC-11358 B72-10280 04
 Investigation of environmental effects on coatings for thermal control
 M-FS-21932 B72-10596 04

PALLADIUM

New electrocatalysts for hydrogen-oxygen fuel cells
 HQ-10537 B70-10145 01
 Hydrogen-oxygen powered internal combustion engine
 LEWIS-90264 B70-10610 07
 Method of joining metals of significantly different expansion rates
 NPO-12076 B71-10028 08
 Submersed sensing electrode used in fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01
 Hydrogen eliminator
 ARC-10408 B72-10208 03
 Magnetic-doped alloys with very large Seebeck coefficients
 M-FS-21410 B72-10318 04

PALLADIUM ALLOYS

New electrocatalysts for hydrogen-oxygen fuel cells
 HQ-10537 B70-10145 01
 Concept for a gas operated actuator
 NPO-11340 B70-10516 07
 Low-cost high-temperature brazing material
 LEWIS-11209 B70-10672 04

Stable palladium alloys for diffusion of hydrogen
 NPO-11747 B73-10024 04

PANELS

Economical printed circuit front panel for computer use
 KSC-10573 B70-10560 01
 Repair of brazed steel honeycomb-sandwich panels with vertical pins only
 MSC-15831 B70-10624 08
 Lightweight, self-evacuated insulation panels
 LEWIS-90361 B70-10646 03
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 B71-10079 04
 Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
 M-FS-21160 B71-10208 04
 Vibration testing and analysis using holography
 M-FS-21050 B71-10352 03
 Simple spectroscope used with solid state image amplifier over wide spectral range
 M-FS-21345 B71-10378 03
 Spool for releasing and retracting flat conductor cable
 M-FS-20234 B71-10416 08
 Reduction of fan noise: A concept
 ARC-10312 B72-10040 06
 Aluminum foil interconnects for solar cell panels
 ARC-10374 B72-10058 08
 Compensating subreflector for two-reflector antennas: A concept
 NPO-11503 B72-10093 06
 Micro regulating ball valve
 ARC-10295 B72-10121 06
 Flexible shielding system for radiation protection
 LRL-10028 B72-10500 03
 Response of a panel structure to reverberant acoustic excitation
 M-FS-21774 B72-10603 06
 Laminating cored, stressed-face, sandwich structures
 XLA-11028 B74-10233 06
 New insulation attachment method eliminates compatibility bondline stresses
 MSC-12615 B74-10269 07

PAPERS

New type of nonflammable paper
 MSC-13432 B70-10546 04
 Systems management techniques and problems
 M-FS-21401 B71-10361 01
 Novel dielectric reduces corona breakdown in ac capacitors
 M-FS-21486 B72-10505 01
 Fire retardant cellulosic foam
 JSC-14336 B73-10085 04
 Oxygen sensitive paper
 M-FS-22354 B73-10103 04
 Polyelectrolytes with high charge density
 NPO-11918 B74-10159 04
 Inspection of transparent surfaces using photosensitive paper
 MSC-19442 B74-10224 03

PARA HYDROGEN

Thermal conductivity of gaseous and liquid hydrogen
 NUC-10558 B71-10105 04

PARABOLAS

Neutron ages computed from
experimental activation data
LEWIS-10949 B70-10557 09

PARABOLIC ANTENNAS

Microwave cryogenic thermal-noise
standards
NPO-11424 B71-10139 03

Enhancing efficiency of single,
large-aperture antennas
HQ-10597 B71-10287 01

Multifrequency laser beams for
holographic contouring
ARC-10341 B71-10534 03

Millimeter-wave antenna system
GSFC-10949 B73-10333 01

Manufacture of large, lightweight
parabolic antennas
ARC-10741 B73-10375 08

Means for mapping radiated fields and
for measuring differential movement of
antenna elements
NPO-13053 B73-10452 02

Variable-beamwidth antennas
GSFC-11760 B74-10041 02

Bidirectional zoom antenna
GSFC-11862 B74-10257 01

Highly-efficient horn/reflector antenna
NPO-13568 B75-10330 01

PARABOLIC REFLECTORS

Ambient-light-absorbing screen for front
projection
ERC-90017 B70-10472 03

Radial rotating antenna-feed system
GSFC-11013 B71-10025 01

Composite antenna feed system operates
from VHF to X-band
GSFC-11046 B71-10410 02

High-gain antenna with singly-curved
reflector
NPO-11361 B73-10291 02

Multiple-reflection conical microwave
antenna
NPO-11661 B73-10299 02

Millimeter-wave antenna system
GSFC-10949 B73-10333 01

PARACHUTES

Strain gage load measuring device - A
concept
MSC-13385 B70-10326 01

Jettisoning system for a parachute's
canister
NPO-11236 B70-10398 06

Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06

PARAFFINS

Resin additive improves performance of
high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04

PARALLAX

Technique for the integral casting of
pressure instrumentation in wind-tunnel
models
LANGLEY-10812 B71-10247 08

PARALLEL PLATES

Prediction of windage power loss in
alternators
LEWIS-10939 B71-10074 06

Parallel-plate viscometer
NPO-11387 B72-10700 03

PARALLEL PROCESSING (COMPUTERS)

Data processor with conditionally
supplied clock signals
GSFC-10975 B74-10021 02

PARAMAGNETISM

Energy levels and transition probability
matrix elements of ruby for maser
applications
NPO-11687 B71-10308 09

Low temperature scale for a 1 to 20
degree Kelvin region
AEC-10007 B72-10146 03

PARAMETERIZATION

Computer programs for the design of
liquid-to-liquid jet pumps
LEWIS-11679 B72-10584 09

FORTTRAN read package
MSC-14161 B72-10750 09

PARAMETRIC AMPLIFIERS

Discrete-component S-band power
amplifier
GSFC-11248 B71-10365 01

Varactor diode assembly with low
parasitic reactances
GSFC-11617 B75-10031 01

Integrated-circuit balanced parametric
amplifier
M-FS-23193 B75-10102 01

PARITY

A frequency division multiplex technique
for transmitting commands
KSC-10521 B71-10169 02

An improved telemetry system
ARC-10336 B71-10201 01

Topological solution of bilateral switching
networks
ARC-10294 B72-10055 01

Input-output, expandable-parity network
HN-10728 B73-10479 02

PARKING ORBITS

Time Data Sequential Processor
/TDSP/
NPO-11327 B70-10720 09

PARTIAL DIFFERENTIAL EQUATIONS

Digital program analyzes supersonic flow
field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09

Theoretical study of a plasma
accelerator
NPO-11480 B70-10683 03

Hybrid computer techniques for solving
partial differential equations
M-FS-21386 B71-10424 09

Computer program draws
three-dimensional surfaces
LEWIS-10482 B72-10253 09

FORTTRAN program for generating a
two-dimensional orthogonal mesh between
two arbitrary boundaries
LEWIS-11863 B72-10753 09

PARTIAL PRESSURE

Prediction of gas leakage of
environmental control systems
HQ-10270 B70-10201 05

Use of nonwetttable membranes for water
transfer
LANGLEY-10743 B70-10235 04

Thin film devices used as oxygen partial
pressure sensors
XLA-06473 B70-10419 04

Vacuum leak detector features higher
sensitivity
ERC-10034 B70-10493 03

Submersed sensing electrode used in
fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01

Submerged gas injector expels cryogenic
liquids from tanks
LEWIS-11231 B71-10219 07

PARTICLE ACCELERATION

Velocity accelerator for particles
NPO-11349 B72-10082 03

Properties of ionization breakdown of air
at microwave frequencies and optimization
of component dimensions for maximum
microwave power
M-FS-21924 B72-10316 01

PARTICLE ACCELERATOR TARGETS

Long life neutron generator target using
deuterium pass-through structure
LEWIS-11866 B74-10063 03

A high yield neutron target
LEWIS-12058 B74-10066 03

PARTICLE ACCELERATORS

Development of superconductive
magnets
LEWIS-11170 B70-10678 03

PARTICLE BEAMS

Oscillation of laser-beam intensity as
observed with beam splitters
ARC-10694 B72-10572 03

PARTICLE COLLISIONS

A method of eliminating hydrogen maser
wall shift
HQ-10663 B72-10670 03

PARTICLE DENSITY (CONCENTRATION)

Preparation of magnetic ferrofluids in
alternative carrier liquids
GSFC-10159 B70-10011 04

Cloud-free resolution element statistics
program
GSFC-11494 B71-10463 09

Particle detection by a light-scattering
technique
ARC-10384 B72-10160 03

Particle detection with intensified laser
beam
HQ-10645 B72-10516 03

PARTICLE DIFFUSION

Particle detection with intensified laser
beam
HQ-10645 B72-10516 03

Long life neutron generator target using
deuterium pass-through structure
LEWIS-11866 B74-10063 03

PARTICLE ENERGY

Monte Carlo program for the transport
of neutrons and gamma rays
LEWIS-11403 B71-10490 09

PARTICLE INTERACTIONS

Optically activated magnetic recording
tape
GSFC-10275 B70-10247 01

Methods for improved resolution of flow
electrophoresis cells
M-FS-22223 B74-10032 04

PARTICLE MASS

Particle impact location detector
GSFC-11829 B74-10230 03

PARTICLE MOTION

The effect of object motion in Fraunhofer
holography with application to velocity
measurements
MSC-12295 B70-10268 03

Holographic photography of high velocity
particles
ERC-10318 B70-10371 03

Particle-fluid interactions for flow
measurements
M-FS-21727 B73-10117 06

Zeta potential control for electrophoresis
cells
M-FS-22333 B73-10260 04

PARTICLE PRODUCTION

Improved dispensing targets for ion beam particle generators
NPO-13112 874-10108 03

PARTICLE SIZE DISTRIBUTION

Producing graphite with desired properties
NUC-11001 871-10042 04
Particle detection with intensified laser beam
HQ-10645 872-10516 03
Carbide factor predicts rolling-element bearing fatigue life
LEWIS-11940 873-10008 07
Improved high volume air sampler
LEWIS-11644 874-10080 05
Developments in spectrophotometry II: A multiple-frequency particle-size spectrometer
NPO-13606 875-10333 03
Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
NPO-13614 875-10335 03

PARTICLE THEORY

Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 870-10114 04

PARTICLE TRAJECTORIES

Improved charged-particle analyzer - A concept
XAC-05506 871-10283 03

PARTICLES

Preparation of fine-particles at cryogenic temperatures
NPO-10250 870-10182 04
Diffusion filter eliminates fringe effects of coherent laser light source
NPO-10417 870-10226 03
Laser beam deflection control: A concept
MSC-13814 872-10411 02
Analysis of microsize particulates
ARC-10647 872-10565 04

PARTICULATE SAMPLING

Particulate and aerosol detector
LANGLEY-11434 873-10357 04
Improved high volume air sampler
LEWIS-11644 874-10080 05

PASCHEN SERIES

Improved plasma accelerator
ARC-10109 871-10454 03

PASSENGERS

System for measuring passenger reaction to transportation-vehicle vibration
LANGLEY-11353 873-10436 05

PASSIVITY

Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 870-10475 04
Multiloop distributed RC active networks
ARC-10200 871-10177 01
Variable-area nozzle automatically controls fluid flow
LEWIS-11217 871-10222 07
Development of chip passivated monolithic complementary MISFET circuits with beam leads
M-FS-22264 872-10696 01

PATHOGENS

Microbial load monitor
MSC-14062 875-10167 05

PATIENTS

Inflatable stretcher to transport patients
HQ-10179 870-10254 05

EKG isolator
M-FS-21236 871-10124 05
Small, low cost, artificial kidney
AEC-10011 872-10371 05

PATTERN RECOGNITION

Pattern recognition technique
NPO-11337 871-10187 06
Speech therapy and voice recognition instrument
HQ-10628 872-10652 05
Multispectral data analysis: LARSYS III
MSC-14823 875-10235 03
Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
MSC-14866 875-10236 03
Small interactive image processing system (SMIPS)
GSFC-12079 875-10295 09

PATTERNS

Three-dimensional pantograph for use in hazardous environments
NUC-10222 870-10567 07

PAVEMENTS

A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 870-10712 06

PAYLOADS

Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 870-10273 04
Vibrational transfer functions for base excited systems
M-FS-21432 871-10441 09
Two-directional active damper
LANGLEY-11815 875-10259 06

PCM TELEMETRY

Delay-lock-loop code-correlation synchronizer
GSFC-11868 875-10291 02

PEAKS

Planet geometric center tracker
ARC-10084 871-10445 02

PEARSON DISTRIBUTIONS

Standardized Pearson type 3 density function area tables
M-FS-20541 871-10205 02
Program for standard statistical distributions
M-FS-21466 872-10602 09

PEENING

Plating by glass-bead peening
GSFC-11163 871-10256 08
Mechanical rod peening
M-FS-23047 874-10237 07

PELLETS

Real-time pair-feeding of animals
ARC-10302 872-10298 05

PELLICLE

Liquid-helium-cooled Michelson interferometer
ARC-10554 872-10217 03

PELTIER EFFECTS

Temperature-controlled fluidic device A concept
HQ-10446 870-10167 03
Semiconductor cooling by thin-film thermocouples
ERC-10149 870-10495 01

PENDULUMS

Spin vector control of a spinning space station
M-FS-21333 871-10296 09

PENETRANTS

Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 871-10103 06
Locating tube blockage that X-ray cannot detect
NUC-10386 871-10129 06
Qualifications and certification of nondestructive testing personnel
M-FS-20850 871-10271 06

PENETRATION

Improved electron-beam welding technique
M-FS-20714 870-10127 08
Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10256 870-10444 04
Nondestructive assessment of penetration of electron-beam welds
MSC-15955 870-10466 08
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 871-10117 08
An empirical relationship for the penetration of 1 to 3 MeV electrons
LEWIS-11495 872-10144 04
Survey of information concerning large diameter deep hole drilling
AEC-10051 872-10238 08
Powered fire nozzle for fast penetration of structures: A concept
MSC-19528 875-10111 06

PENETROMETERS

Glass transition temperatures of liquid prepolymers obtained by thermal penetrometry
NPO-11730 873-10036 04

PENS

Three-dimensional pantograph for use in hazardous environments
NUC-10222 870-10567 07

PENTANES

Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 870-10334 04
Evaluating foam heterogeneity
AEC-10046 872-10365 04

PEPTIDES

New primers for adhesive bonding of aluminum alloys
M-FS-21387 871-10488 04
Reductive cleavage of the peptide bond
LRL-10026 873-10194 04

PERCEPTION

Human performance measuring device
LANGLEY-10679 870-10619 05

PERCHLORATES

Electroplating on titanium alloy
M-FS-21251 871-10338 08

PERCHLORIC ACID

Recommended safety guides for industrial laboratories and shops
SAN-10050 871-10175 07

PERCUSSION

Modified faceplate assembly for stud-welding gun
M-FS-16725 870-10044 08

PERFLUORO COMPOUNDS

Polymerization of perfluorobutadiene
NPO-10863 870-10131 04
Preparation of highly fluorinated diols containing ether linkages
NPO-10768 870-10353 04

Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 870-10453 04

Preparation of perfluoropolyether prepolymers
NPO-10765 871-10004 04

Preparation of highly fluorinated polyurethanes
NPO-10767 871-10005 04

Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 871-10291 04

PERFORATING

Thermal-difference compensation for structural members
M-FS-20433 870-10014 07

Evaluation of two designs for cryogenic insulation
M-FS-14740 870-10415 03

Indexing film with a fluidic sensor
MSC-14117 872-10501 02

PERFORMANCE

New model performance index for engineering design of control systems
HQ-10520 870-10293 06

Accurate measurement of telemetry performance
NPO-11457 872-10089 02

Performance of silicon solar cell assemblies
NPO-11847 872-10186 01

A method for calculating the effects of design errors and measurement errors on pump performance
LEWIS-11503 872-10292 07

Oscillating hot-wire anemometer
NPO-11634 872-10609 02

Comparative performance of double-focus and quadrupole mass spectrometers
NPO-11689 872-10702 03

PERFORMANCE PREDICTION

Post Flight Dynamic Analysis Simulation
M-FS-15067 870-10605 09

Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 871-10022 03

Lift distribution in a rectangular jet
ARC-10424 871-10030 09

Computer program for predicting creep behavior of bodies of revolution
NUC-11104 871-10037 09

Prediction of windage power loss in alternators
LEWIS-10939 871-10074 06

Numerical integration of second order differential equations
M-FS-20536 871-10186 09

Calibration-interval adjustment indicator - A concept
M-FS-18693 871-10309 01

Accelerated battery-life testing - A concept
GSFC-11085 871-10348 06

Dynamics of short pressure probes
LEWIS-11293 871-10374 09

Vibrational transfer functions for base excited systems
M-FS-21432 871-10441 09

Prediction of ducted fan performance
ARC-10615 872-10064 09

Reliability analysis based on operational success criteria
ARC-10490 872-10214 09

Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
GSFC-11523 872-10675 09

Integrated multi-path program analysis and cost technique (IMPACT)
M-FS-21880 872-10676 09

Final report on a study of low-density nozzle flows, with application to microthrust rockets
HQ-10761 872-10748 06

Method for predicting rotor free-wake positions and the resulting rotor blade airloads
LANGLEY-10674 873-10239 06

A new algorithm for finding survival coefficients employed in reliability equations
M-FS-22295 873-10256 09

Optimization of structures on the basis of fracture mechanics and reliability criteria
NPO-11645 873-10276 06

Dynamic power load simulator
JSC-14285 873-10305 02

Program for calculating total-efficiency of specific-speed characteristics of centrifugal compressors
LEWIS-12008 873-10309 09

Nomograph for prediction of RF-breakdown voltages
NPO-11819 873-10386 01

Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 874-10091 06

Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
ARC-10833 874-10113 09

Reliability data for electronic and electromechanical components: A report
NPO-13153 874-10280 01

Telecommunications systems design techniques handbook
NPO-13245 874-10284 02

Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 874-10301 03

PERFORMANCE TESTS

Solenoid valve performance characteristics studied
M-FS-12458 870-10066 07

Testing device for verifying the performance of digital recorders
KSC-10300 870-10149 01

Performance-limit criteria for the design of fast-response servo-actuation systems
LEWIS-11022 870-10152 02

Automated validation of a computer operating system
M-FS-14510 870-10257 09

Coulometer battery state-of-charge indicator
LEWIS-11083 870-10323 01

Evaluation of two designs for cryogenic insulation
M-FS-14740 870-10415 03

Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 870-10649 03

A 7.6m /25-ft/ extreme environments simulator
NPO-11353 871-10036 03

Fabrication techniques for organic electrolyte battery
AEC-10019 872-10428 08

Poppet valve tester
LEWIS-11655 873-10415 07

Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 875-10148 05

Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 875-10185 03

PERMALLOYS (TRADEMARK)

Two-axis flux gate magnetometer
GSFC-10441 870-10345 01

A 1-1/2-level on-chip-decoding bubble memory chip design
LANGLEY-11766 875-10222 01

PERMEABILITY

Concept for a gas operated actuator
NPO-11340 870-10516 07

Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 871-10071 01

Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 871-10079 04

High temperature autoclave vacuum seals
M-FS-21131 871-10433 08

Improved elastomer for use with oxygen difluoride
ARC-10528 872-10027 04

Halogenation of microcapsule walls
ARC-10410 872-10161 04

Water purification by reverse osmosis using heterocyclic polymer membranes
LANGLEY-10514 872-10230 04

High temperature permeameter for measuring magnetic properties
LEWIS-11609 872-10443 03

Reduction of porosity in aluminum weldments
MSC-14198 872-10734 08

PERMEATING

New method speeds body inert gas saturation and utilizes surface decompression
MSC-13543 871-10330 05

Advances in induction-heated plasma torch technology
LEWIS-11354 872-10151 03

Rubber composition compatible with hydrazine
NPO-11440 873-10019 04

PERMUTATIONS

Logical-function generator
XLA-05099 873-10360 09

PEROXIDES

Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 870-10104 04

Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 871-10291 04

PERSONNEL

Color identification testing device
KSC-10278 870-10264 01

Generalized safety equation - A concept
M-FS-20522 871-10183 06

Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 871-10341 01

Communications system for zero-g simulation tests in water
M-FS-21357 871-10344 02

- Microbial burden prediction model
program
NPO-11709 871-10401 09
- Radiographic inspection specifications for electronic components
M-FS-20723 871-10438 01
- High voltage protection network
ARC-10197 872-10119 02
- PERSONNEL MANAGEMENT**
Systems approach provides management control of complex programs
M-FS-20791 870-10647 06
- Program audit, A management tool
KSC-10557 871-10380 01
- FORTTRAN manpower account program
NPO-11973 872-10623 09
- PERSONNEL SELECTION**
Manpower forecast program
NPO-11551 871-10244 09
- Qualifications and certification of nondestructive testing personnel
M-FS-20850 871-10271 06
- PERSONNEL SUBSYSTEMS**
FORTTRAN manpower account program
NPO-11973 872-10623 09
- PERT**
PERT "C"
M-FS-20164 870-10184 09
- GREMEX update (Goddard research engineering management exercise)
GSFC-11512 873-10162 09
- The Langley Research Center
NASA/PERT TIME III
LANGLEY-11887 875-10302 09
- PERTURBATION**
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 870-10603 09
- Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 870-10690 03
- Closed-loop control of stochastic nonlinear systems
MSC-13858 871-10306 09
- Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 872-10209 03
- Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 872-10604 09
- Transonic divider for gas chromatograph effluents
NPO-11479 872-10706 03
- PERTURBATION THEORY**
Chebyshev minimax control theory
M-FS-20639 870-10315 03
- Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 870-10442 03
- Theoretical study of a plasma accelerator
NPO-11480 870-10683 03
- PETROLOGY**
Improved dispensing targets for ion beam particle generators
NPO-13112 874-10108 03
- PH**
Growing single crystals in silica gel
ERC-10306 870-10479 02
- Microwave dosimeter - A concept
HQ-10407 871-10075 01
- A method of isolating organic compounds present in water
AEC-10010 872-10044 04
- Sensor capsule for diagnosis of gastric disorders
HQ-10767 872-10531 05
- PH FACTOR**
Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
MSC-17153 871-10097 04
- Insolubilization process increases enzyme stability
ARC-10314 871-10443 04
- PHARMACOLOGY**
Chebyshev minimax control theory
M-FS-20639 870-10315 03
- Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 872-10006 05
- PHASE COHERENCE**
Multipass holographic interferometer improves image resolution
HQ-10499 870-10426 03
- Amplitude-steered, pseudophased antenna array
GSFC-11446 874-10255 01
- PHASE CONTROL**
Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 870-10457 02
- Low distortion automatic phase control circuit
M-FS-21671 872-10682 02
- Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 874-10251 01
- Continuous-phase frequency-shift-keyed generator
LANGLEY-11638 875-10218 02
- Low-noise K(u)-band receiver input system
NPO-13645 875-10281 02
- PHASE DEMODULATORS**
Telemetry receiver
NPO-10746 870-10008 02
- PHASE DETECTORS**
Digital data transition tracking loop improves data reception
NPO-10844 870-10009 02
- Ranging code processor
NPO-10066 870-10060 02
- Continuously variable voltage-controlled phase shifter
NPO-11129 870-10073 01
- Equipment-tolerant range code demodulation method - A concept
M-FS-13987 870-10267 01
- Two-axis flux gate magnetometer
GSFC-10441 870-10345 01
- Metal detector system
ARC-10265 870-10511 01
- Constant-amplitude, frequency-independent phase shifter
ARC-10269 871-10230 02
- Planet geometric center tracker
ARC-10084 871-10445 02
- Vibrating ribbon bolometer: A concept
XAC-10768 872-10170 03
- Low distortion automatic phase control circuit
M-FS-21671 872-10682 02
- Synchro phase selector aid
LANGLEY-11282 873-10160 01
- Synchronous ten-megabit biphasic detector
M-FS-22546 873-10323 02
- Frequency discriminator/phase detector
NPO-11515 874-10098 02
- PHASE DIAGRAMS**
Superconductor transition temperatures study
M-FS-21247 871-10385 03
- Computer program draws three-dimensional surfaces
LEWIS-10482 872-10253 09
- PHASE ERROR**
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 870-10267 01
- Stable group delay cable
NPO-13138 874-10295 01
- PHASE LOCK DEMODULATORS**
New filter technique improves home television reception
MSC-13729 871-10141 02
- Synchronous ten-megabit biphasic detector
M-FS-22546 873-10323 02
- PHASE LOCKED SYSTEMS**
Telemetry receiver
NPO-10746 870-10008 02
- Radio frequency baseband recording technique
HQ-10317 870-10069 02
- Burst synchronization detection system
MSC-90317 870-10159 02
- Signal phase switches offer greater dynamic range
NPO-10709 870-10393 01
- Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 870-10451 02
- Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 870-10572 02
- Phase locking of field sequential color wheel for small TV camera
MSC-13857 871-10326 02
- Double phase-lock loop with rapid transient response - A concept
GSFC-10864 871-10349 01
- Signal to noise measurement circuit
GSFC-11239 872-10102 01
- Code-regenerative clean-up loop for a ranging transponder
NPO-11707 873-10141 02
- Automatic carrier acquisition system for phase-lock-loop receivers
NPO-11628 873-10343 02
- All-digital phase-lock loops for noise-free signals
NPO-11914 873-10350 01
- Frequency discriminator/phase detector
NPO-11515 874-10098 02
- Digital second-order phase-locked loop
NPO-11905 874-10274 01
- Real-time speech analyzer
NPO-13465 875-10205 02
- PHASE MODULATION**
General technique for measurement of refractive index variations
HQ-10359 870-10064 01
- Block-coded communications
NPO-11397 870-10242 02
- A proposed laser measurement system for determining surface contour
HQ-10326 870-10263 02
- Digital phase-modulation/multiplex system
NPO-11338 870-10355 02
- Circuit suppresses spurious sidebands
MSC-13425 870-10541 01
- Digital decoder for phase-delay coded data
GSFC-10894 871-10345 01

SUBJECT INDEX

Sensitive holographic detection of small aerodynamic perturbations
 ARC-10422 B72-10209 03

Two-carrier command modulation system
 NPO-11548 B73-10273 02

Dually-mode-locked ND: YAG laser
 GSFC-11746 B74-10038 03

Wide deviation phase modulator
 LANGLEY-11607 B74-10178 02

Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
 HQ-10844 B75-10087 03

Power spectrum analysis of staggered quadruphase-shift-keyed signals
 MSC-14865 B75-10318 09

PHASE SHIFT

Buck-boost dc voltage regulator
 GSFC-10735 B70-10005 01

High-resolution spectral analysis
 NPO-10748 B70-10039 01

Antenna-array, phase quadrature tracking system
 MSC-12205 B70-10095 02

A proposed laser measurement system for determining surface contour
 HQ-10326 B70-10263 02

Computerized polar plots by a cathode ray tube/grid overlay method
 M-FS-14464 B70-10311 03

A self-tuning filter
 ARC-10264 B70-10337 01

Constant-amplitude RC oscillator
 ARC-10262 B70-10338 01

Sinusoidal-pressure generator for testing dynamic pressure probes
 LEWIS-11094 B70-10352 06

Artificial-feedback system
 GSFC-10324 B70-10421 02

Digital demodulation with data subcarrier tracking
 NPO-10858 B70-10518 02

Multiloop distributed RC active networks
 ARC-10200 B71-10177 01

Oscillator with wide dynamic tuning range
 GSFC-11086 B71-10286 01

Experimental determination of damping parameters of viscoelastic materials
 M-FS-20534 B71-10297 04

Phase locking of field sequential color wheel for small TV camera
 MSC-13857 B71-10326 02

Vibration testing and analysis using holography
 M-FS-21050 B71-10352 03

Vibrating ribbon bolometer: A concept
 XAC-10768 B72-10170 03

Low phase-shift amplifier
 NPO-11663 B72-10185 01

Nondestructive testing of microtab welds
 ARC-10176 B72-10296 02

Low frequency sinusoidal pressure generator
 LEWIS-11465 B72-10477 01

Design of microstrip components by computer
 LANGLEY-11210 B72-10741 01

Heart-rate pulse-shift detector
 ARC-10729 B74-10196 01

PHASE SHIFT CIRCUITS

Digital frequency discriminator
 M-FS-14322 B70-10010 01

Continuously variable voltage-controlled phase shifter
 NPO-11129 B70-10073 01

Phase interpolation circuits using frequency multiplication for phased arrays
 ERC-10285 B70-10457 02

Constant-amplitude, frequency-independent phase shifter
 ARC-10269 B71-10230 02

The thin film microwave iris
 LANGLEY-10511 B72-10548 02

Four-phase differential phase shift resolver
 JSC-14065 B73-10093 02

PHASE SHIFT KEYING

Digital phase-modulation/multiplex system
 NPO-11338 B70-10355 02

Carrier extraction circuit
 JSC-14262 B73-10094 02

Phase shift keyed, pulse code modulated signal synchronizer
 JSC-12462 B73-10107 02

Power spectrum analysis of staggered quadruphase-shift-keyed signals
 MSC-14865 B75-10318 09

PHASE TRANSFORMATIONS

Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
 LEWIS-11574 B72-10330 06

Phase-change materials handbook
 M-FS-22064 B72-10464 04

Automated electronic system for measuring thermophysical properties
 LANGLEY-11883 B75-10160 03

Computer program for calculating water and steam properties
 LEWIS-12519 B75-10187 09

PHASE VELOCITY

Ultrasonic calibration device
 LANGLEY-11435 B73-10420 03

Transmission Oscillator Ultrasonic Spectrometer (TOUS): A new research instrument
 LANGLEY-11735 B75-10035 03

PHASED ARRAYS

Phase interpolation circuits using frequency multiplication for phased arrays
 ERC-10285 B70-10457 02

Fabrication of electroacoustic RF amplifiers
 ERC-10266 B70-10460 01

Characteristics of step-recovery-diode frequency multipliers
 M-FS-20558 B70-10505 01

Ferrite attenuator modulation improves antenna performance
 NPO-12011 B70-10702 01

Economical phased-array antenna for environmental applications
 HQ-10434 B71-10057 02

Beam squint correction for a duplex, retrodirective phased array
 GSFC-11023 B71-10444 02

Microstrip antennas
 LANGLEY-11284 B73-10179 01

Phased-array antenna phase control circuit using frequency multiplication
 ERC-10285 B74-10251 01

Amplitude-steered, pseudophased antenna array
 GSFC-11446 B74-10255 01

PHASED LOCKED SYSTEMS

Frequency control circuit for all-digital phase-lock loops
 NPO-11936 B73-10351 01

PHOSPHONIUM COMPOUNDS

Data-aided carrier tracking loops
 NPO-11282 B73-10356 01

PHENOLIC RESINS

Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03

Phenolic cutter for machining foam insulation
 M-FS-14170 B70-10089 07

Lightweight, high-strength, reinforced plastic tube-framing die
 LANGLEY-10126 B70-10273 04

Polyimide polymers provide improved ablative materials
 LEWIS-10861 B70-10300 04

Polyimide polymers provide higher char yield for graphitic structures
 LEWIS-10860 B70-10330 04

Evaluation of omniweave reinforcement for composite fabrication
 M-FS-20946 B71-10245 04

Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
 LEWIS-11261 B71-10261 04

Granular two-phase insulation systems
 NPO-12068 B71-10290 04

Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 B71-10303 04

Halogenation of microcapsule walls
 ARC-10410 B72-10161 04

PHENOLS

Statistical characterization of phenolic-novolac structures
 ARC-10393 B71-10255 04

Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04

A method of isolating organic compounds present in water
 AEC-10010 B72-10044 04

Initiation of polymerization by tetrabutylammonium p-lithiophenoxide
 ARC-10553 B72-10223 04

PHENYLS

Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01

PHONEMES

Techniques for decoding speech phonemes and sounds: A concept
 GSFC-11898 B75-10086 02

PHONONS

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
 ERC-10463 B70-10269 03

PHOSPHATES

Stress corrosion crack inhibiting method for titanium
 NPO-10271 B70-10129 03

Phosphorus in land-water systems
 AEC-10049 B72-10429 05

Research on bearing lubricants for use in a high vacuum
 M-FS-22119 B72-10469 04

Boron-10 loaded inorganic shielding material
 M-FS-22280 B72-10740 04

PHOSPHONIUM COMPOUNDS

Phosphonium chloride for thermal storage
 ARC-10572 B72-10422 04

PHOSPHORIC ACID

Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08

Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04

Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01

Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03

Improved photoetching fabrication method
LEWIS-11268 B72-10745 08

PHOSPHORS

Neutron-image intensifier
ARG-10249 B70-10240 03

Luminescent screen composition and apparatus
ERC-10010 B70-10440 01

Multilayer screen gives cathode ray tube high contrast
ERC-10217 B70-10454 01

Color television system using single gun color cathode ray tube
ERC-10098 B70-10464 02

Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06

Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03

Projections of scan patterns on human retina
ARC-10181 B72-10193 05

A visual-display and storage device
GSFC-10901 B72-10647 02

PHOSPHORUS

Improved silicon solar cells
LEWIS-10964 B70-10029 01

Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01

PHOSPHORUS COMPOUNDS

Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 B70-10540 04

Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04

Radiation-induced nickel deposits
LEWIS-10965 B72-10456 04

PHOSPHORUS POLYMERS

Curable polyphosphazenes
M-FS-23134 B75-10038 04

PHOSPHORYLATION

Immobilized phosphorylase for synthesis of polysaccharides from glucose
ARC-10680 B72-10550 04

Enzymatic regeneration of adenosine triphosphate cofactor
ARC-10837 B74-10057 04

PHOTOCATHODES

Improved optical lens system
NPO-11311 B70-10354 03

Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03

Advanced infrared photomultiplier
M-FS-20941 B72-10152 03

Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03

A sensitive image intensifier which uses inert gas
LRL-10024 B72-10312 03

A magnetically focused image tube employing an opaque photocathode
GSFC-11602 B73-10255 02

PHOTOCHEMICAL REACTIONS

Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04

Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04

Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01

Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03

Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03

PHOTOCHROMISM

Photochromism of dihydroquinolines
HQ-10574 B70-10574 04

PHOTOCONDUCTIVE CELLS

An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06

Facility for testing solar cells
NPO-11761 B74-10099 02

PHOTOCONDUCTIVITY

Picosecond pulse measurement by two-photon excitation of photographic film
ERC-10227 B70-10377 02

High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04

Improved photovoltaic devices, using transparent contacts
LANGLEY-11761 B75-10220 01

PHOTOCONDUCTORS

Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05

New method for photoresist stripping
ERC-10239 B70-10497 04

Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01

Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02

High solar intensity radiometer
LEWIS-11533 B72-10130 03

Sputter etching of hemispherical bearings
HQ-10712 B72-10534 08

Laser addressed holographic memory system
M-FS-22565 B73-10155 03

Combined sun-acquisition and sun gate-sensor system for spacecraft attitude control
NPO-13051 B73-10460 02

Laser scanned image sensors using photoconductors with deep traps
NPO-13131 B75-10112 03

Optical feedback technique extends frequency response of photoconductors
LANGLEY-11768 B75-10223 03

PHOTODIODES

Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01

Technique for depositing silicon dioxide on indium arsenide improves adhesion
ERC-10130 B70-10475 04

Glass-to-metal bonding process improves stability and performance of semiconductor devices
ERC-10264 B70-10477 01

Laser beam hydrocarbon detector
ARC-10156 B70-10631 03

Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02

High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03

Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 B72-10053 03

Particle detection by a light-scattering technique
ARC-10384 B72-10160 03

An absentee monitoring device
KSC-10668 B72-10578 01

Solar aspect determination system
GSFC-11444 B73-10129 02

Binary-selectable detector holdoff circuit
M-FS-22898 B73-10487 02

PHOTOELASTIC ANALYSIS

Testing filamentary composites
HQ-10268 B70-10004 04

PHOTOELASTICITY

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03

PHOTOELECTRIC CELLS

Diffusion technique for lithium-doped silicon
GSFC-10827 B70-10148 01

Noncontacting-optical-strain device
NPO-10778 B70-10292 03

Reducing streak film data via electronic cross correlator
M-FS-18804 B70-10365 01

Solar experiment alignment system
ARC-10471 B72-10020 03

Wide angle solar sensor
NPO-11341 B72-10080 01

Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03

Stable photosensor amplifiers
NPO-11561 B72-10100 01

Tornado detector and alarm
M-FS-20915 B72-10106 01

Time-lapse camera for microscopy
ARC-10423 B72-10125 05

Programmed physiological infusion system
ARC-10447 B72-10126 05

Illumination control system
ARC-10527 B72-10167 02

Projections of scan patterns on human retina
ARC-10181 B72-10193 05

Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03

Visual sensitivity tester
ARC-10329 B72-10203 05

Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05

Broadband RF-distribution amplifier
NPO-11401 B72-10245 01

- A magnetic mouse activity meter
 HQ-10664 B72-10482 05
 Photomultiplier blanking circuit
 ARC-10593 B72-10561 01
 Portable light detection system for the blind
 M-FS-22403 B73-10099 05
 Position sensing materials wound on a reel
 GSFC-11902 B75-10249 07
- PHOTOELECTRIC EFFECT**
 Photomultiplier blanking circuit
 ARC-10593 B72-10561 01
 Improved photoetching fabrication method
 LEWIS-11268 B72-10745 08
- PHOTOELECTRIC EMISSION**
 Neutron-image intensifier
 ARG-10249 B70-10240 03
 Advanced infrared photomultiplier
 M-FS-20941 B72-10152 03
 Simple dynamic electromagnetic radiation detector
 LEWIS-11159 B72-10227 03
 Photomultiplier blanking circuit
 ARC-10593 B72-10561 01
 Photoemissive coating
 M-FS-22003 B72-10638 08
- PHOTOELECTRIC MATERIALS**
 Picosecond pulse measurement by two-photon excitation of photographic film
 ERC-10227 B70-10377 02
 Optimum doping achieves high quantum yields in GaAs photoemitters
 M-FS-20962 B71-10357 03
 Thin-film ultraviolet detector and spectrometer
 NPO-11432 B72-10701 03
- PHOTOELECTRICITY**
 Nematic liquid crystals for optical shutters: A concept
 NPO-11367 B72-10083 03
 Stable photosensor amplifiers
 NPO-11561 B72-10100 01
- PHOTOELECTRONS**
 Electron energy analyzer
 HQ-10373 B70-10138 02
 Reduction of background in an X-ray proportional counter
 HQ-10253 B70-10169 02
- PHOTOGRAMMETRY**
 Laser altimeter
 M-FS-13691 B70-10196 02
- PHOTOGRAPHIC DEVELOPERS**
 Thin spray film thickness measuring technique
 M-FS-20842 B71-10062 08
 Silver-chlorine fuel cell: A concept
 ARC-10491 B72-10221 03
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04
- PHOTOGRAPHIC EMULSIONS**
 Picosecond pulse measurement by two-photon excitation of photographic film
 ERC-10227 B70-10377 02
- PHOTOGRAPHIC EQUIPMENT**
 Holographic stress analysis
 M-FS-20687 B70-10123 01
 Slide checkout console
 MSC-12318 B70-10290 02
 Radiant heating concept efficient for light-transmitting windows
 M-FS-20630 B70-10324 03
- Ambient-light-absorbing screen for front projection
 ERC-90017 B70-10472 03
 Carriage-rail assembly for high-resolution mechanical positioning
 M-FS-20908 B70-10714 07
 Modified bubble level senses pitch and roll angles over wide range
 MSC-13506 B71-10085 03
 Application of calibration masks to TV vidicon tube
 KSC-10589 B71-10404 02
 Annular objective apertures improve resolution of electron microscopes
 ARC-10448 B72-10171 03
 Film holder for curved vacuum platen
 MSC-14120 B72-10542 07
 Vertical copy camera system provides photographs from ERTS-1 imagery
 LEWIS-12140 B74-10009 07
 Viewgraph preparation made easier
 LANGLEY-11612 B74-10094 03
- PHOTOGRAPHIC FILM**
 Diffusion filter eliminates fringe effects of coherent laser light source
 NPO-10417 B70-10226 03
 Electro-optical time marker for high-speed cameras
 KSC-10294 B70-10229 01
 High speed television camera system processes photographic film data for digital computer analysis
 NPO-10745 B70-10282 02
 Multispectral facsimile reproducer
 LANGLEY-10618 B70-10360 03
 Reducing streak film data via electronic cross correlator
 M-FS-18804 B70-10365 01
 Picosecond pulse measurement by two-photon excitation of photographic film
 ERC-10227 B70-10377 02
 Laser method for finding axis of rotation
 ARC-10388 B70-10439 03
 Concept for high speed computer printer
 KSC-10373 B70-10484 09
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Multiple shutters for a stereoscopic camera
 MSC-13507 B71-10065 03
 Modified camera records lens settings on film
 MSC-12363 B71-10494 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Analog table look-up device identifies unknown terrain
 MSC-13816 B72-10033 03
 Time-lapse camera for microscopy
 ARC-10423 B72-10125 05
 Improved intensifying screen reduces X-ray exposure
 AEC-10090 B72-10232 03
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04
 Neutron radiographic viewing system
 M-FS-22024 B72-10468 02
 A rapid, precise, reciprocating-movement color filter system
 GSFC-11255 B72-10497 07
 Indexing film with a fluidic sensor
 MSC-14117 B72-10501 02
- Film handling system for laser scanner/recorder
 MSC-14121 B72-10539 07
 Film holder for curved vacuum platen
 MSC-14120 B72-10542 07
 Precision glasscutter
 LANGLEY-11604 B74-10031 07
 Viewgraph preparation made easier
 LANGLEY-11612 B74-10094 03
 Automatic marker for photographic film
 MSC-14705 B74-10152 03
- PHOTOGRAPHIC MEASUREMENT**
 Reducing streak film data via electronic cross correlator
 M-FS-18804 B70-10365 01
 Measuring internal dimensions of small transparent objects
 LANGLEY-10712 B71-10505 08
- PHOTOGRAPHIC PLATES**
 Film holder for curved vacuum platen
 MSC-14120 B72-10542 07
 Optimal read/write memory system components
 M-FS-22044 B72-10697 01
- PHOTOGRAPHIC PROCESSING**
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04
 Improved photographic prints with a linear radial transmission filter
 LANGLEY-11221 B73-10242 03
 Vertical copy camera system provides photographs from ERTS-1 imagery
 LEWIS-12140 B74-10009 07
- PHOTOGRAPHIC PROCESSING EQUIPMENT**
 Neutron radiographic viewing system
 M-FS-22024 B72-10468 02
 Film holder for curved vacuum platen
 MSC-14120 B72-10542 07
 Precision glasscutter
 LANGLEY-11604 B74-10031 07
 Contact-eutectic-lens fabrication technique
 M-FS-23275 B75-10308 04
- PHOTOGRAPHIC RECORDING**
 Methyl alcohol used as penetrant inspection medium for porous materials
 NUC-10419 B71-10103 06
 Vibration analysis by time-average holography
 LANGLEY-10614 B71-10333 03
 Modified camera records lens settings on film
 MSC-12363 B71-10494 03
 Cine recording ophthalmoscope
 ARC-10399 B72-10189 05
 A rapid, precise, reciprocating-movement color filter system
 GSFC-11255 B72-10497 07
 An automatic lightning detection and photographic system
 KSC-10728 B73-10043 02
 A high-speed spectrograph shutter
 HQ-10635 B73-10368 01
- PHOTOGRAPHIC TRACKING**
 Optical discriminator system
 LANGLEY-11580 B74-10139 03
- PHOTOGRAPHS**
 Pulse rates recorded by digital film positioner
 HQ-10358 B70-10141 01
 Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Luminescent screen composition and apparatus
 ERC-10010 B70-10440 01

PHOTOGRAPHY

Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08
Solar cell power scanner
LEWIS-11280 B71-10223 02
Measuring internal dimensions of small transparent objects
LANGLEY-10712 B71-10505 08

PHOTOGRAPHY

Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
Stellar spectrum classifier
MSC-13450 B70-10319 03
Variables in turbine erosion
M-FS-18677 B70-10325 03
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
Computer-aided design of large-scale integrated circuits - A concept
M-FS-20600 B71-10238 09
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Simple spectroscope used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03
High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 B71-10492 09
Modified camera records lens settings on film
MSC-12363 B71-10494 03
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Bacterial contamination monitor
GSFC-10879 B73-10222 05
Improved photographic prints with a linear radial transmission filter
LANGLEY-11221 B73-10242 03
A real time moving-scene holographic camera
M-FS-21087 B73-10421 03
Photography of random motion with a holographic camera
M-FS-22537 B73-10435 03

PHOTOINTERPRETATION

Reference for radiographic film interpreters
M-FS-16695 B70-10189 03

PHOTOIONIZATION

Photoionization mass spectrometer
HQ-10167 B70-10113 03
Improved photoionization mass spectrometer
LANGLEY-10180 B70-10402 04

PHOTOLUMINESCENCE

Rapid method for determination of antimicrobial susceptibilities pattern of urinary bacteria
GSFC-12039 B75-10253 05

PHOTOLYSIS

Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03

Chemical-ionization visible and ultraviolet gas lasers: A concept
NPO-13289 B75-10115 03

PHOTOMECHANICAL EFFECT

Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03

PHOTOMETERS

Laser altimeter
M-FS-13691 B70-10196 02
Vacuum leak detector features higher sensitivity
ERC-10034 B70-10493 03
Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05
Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 B71-10051 05
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 B71-10120 03
Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 B71-10232 03
Laser vibration analyzer
XAC-01670 B71-10249 03
Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03
Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
Projections of scan patterns on human retina
ARC-10181 B72-10193 05
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Lightning flash detection system
ARC-10562 B72-10272 02
Optical monitoring system
M-FS-21692 B73-10050 03
Laser system detects tower deflections
LEWIS-11870 B73-10243 02
Automatic focus control for facsimile camera
LANGLEY-11213 B73-10361 02
Digital multichannel photometer
HQ-10791 B74-10200 03
Wide-angle sun sensors
NPO-13327 B75-10202 03
Inexpensive pocket-size solar energy meter (insolometer)
LEWIS-12598 B75-10283 01

PHOTOMETRY

Television camera as a scientific instrument
NPO-11164 B70-10209 03
Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02

SUBJECT INDEX

Microflora in soils of desert regions
NPO-11215 B70-10253 05
Stable photosensor amplifiers
NPO-11561 B72-10100 01

PHOTOMICROGRAPHS

Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
Time-lapse camera for microscopy
ARC-10423 B72-10125 05

PHOTOMICROGRAPHY

Measuring internal dimensions of small transparent objects
LANGLEY-10712 B71-10505 08
Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
Hand-held photomicroscopy system
ARC-10468 B72-10190 03

PHOTOMULTIPLIER TUBES

Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
Signal conditioner circuit for photomultiplier tube
XLA-10773 B70-10096 01
Electron energy analyzer
HQ-10373 B70-10138 02
Laser altimeter
M-FS-13691 B70-10196 02
A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02
Apparatus for simultaneous ion counting and current recording in mass spectrometry
LEWIS-11103 B70-10471 03
Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05
Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03
Scintillation detector for carbon-14
ARC-10378 B71-10144 03
Pattern recognition technique
NPO-11337 B71-10187 06
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
A liquid radiation detector with high spatial resolution
MSC-13965 B72-10034 03
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
Scanning technique for tracking small eye-movements
ARC-10488 B72-10220 05
Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03
Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03
Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
A reusable prepositioned ATP reaction chamber
HQ-10660 B72-10525 05

- Photomultiplier blanking circuit
ARC-10593 B72-10561 01
- Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09
- Light-direction sensor based on birefringency
NPO-11201 B73-10131 03
- Digital multichannel photometer
HQ-10791 B74-10200 03
- Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
- Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 B75-10170 05
- Electro-optical detector to improve sensitivity of a focal-plane mass spectrometer
NPO-13524 B75-10328 03
- PHOTON BEAMS**
- Oscillation of laser-beam intensity as observed with beam splitters
ARC-10694 B72-10572 03
- PPUAS-photopack unfolding and self-shielding program
NPO-13188 B73-10087 09
- Soft X-ray lasers using distributed-feedback reflection: A concept
NPO-13532 B75-10239 03
- PHOTONS**
- Improved magnetron cold-cathode ion source
LANGLEY-10387 B70-10023 02
- Picosecond pulse measurement by two-photon excitation of photographic film
ERC-10227 B70-10377 02
- Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
- Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
- Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 B72-10053 03
- A Compton scatter attenuation gamma ray spectrometer
M-FS-21441 B72-10487 03
- PHOTOPLASTICITY**
- Optimal read/write memory system components
M-FS-22044 B72-10697 01
- PHOTORECEPTORS**
- Read-only optical storage medium
M-FS-23169 B75-10305 03
- PHOTOSENSITIVITY**
- Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
- Concept for high speed computer printer
KSC-10373 B70-10484 09
- Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
- Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02
- Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03
- Electro-optical detector to improve sensitivity of a focal-plane mass spectrometer
NPO-13524 B75-10328 03
- PHOTOSYNTHESIS**
- A dual-beam actinic light source for photosynthesis research
ARC-10351 B72-10205 05
- PHOTOTRANSISTORS**
- EKG isolator
M-FS-21236 B71-10124 05
- New reaction tester accurate within 56 microseconds
MSC-13604 B72-10031 05
- Solid state television camera has no imaging tube
M-FS-21553 B72-10254 02
- Overlap diffusion for increasing phototransistor dynamic range
M-FS-20407 B72-10347 01
- PHOTOTUBES**
- Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03
- PHOTOVOLTAIC CELLS**
- Glass-to-metal bonding process improves stability and performance of semiconductor devices
ERC-10264 B70-10477 01
- Solar cell power scanner
LEWIS-11280 B71-10223 02
- Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01
- Solar experiment alignment system
ARC-10471 B72-10020 03
- High solar intensity radiometer
LEWIS-11533 B72-10130 03
- Schottky barrier solar cell promises improved efficiency
NPO-13482 B75-10125 03
- Improved photovoltaic devices, using transparent contacts
LANGLEY-11761 B75-10220 01
- PHYSICAL CHEMISTRY**
- Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
ARG-10412 B70-10233 04
- Method for estimating solubility parameter
NPO-11647 B73-10022 04
- Computer program for calculation of thermodynamic and transport properties of complex chemical systems
LEWIS-11997 B73-10231 09
- PHYSICAL EXERCISE**
- Therapeutic hand-exercising device with cycling pressure value
LANGLEY-11579 B74-10140 05
- PHYSICAL PROPERTIES**
- Biological handbook for engineers
M-FS-20349 B70-10255 05
- Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
- Low temperature uses of helium
LEWIS-11171 B70-10673 03
- Development of a silver-zinc battery system
NPO-11444 B70-10718 02
- Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
- Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04
- Improved thermally conducting electron transfer polymers
GSFC-11304 B72-10291 04
- Graphite and boron-reinforced composite materials data summary
M-FS-21691 B72-10294 04
- Polyimide foams provide thermal insulation and fire protection
ARC-10464 B72-10300 04
- Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04
- Polymeric binder for explosives
AEC-10062 B72-10366 04
- Bondability of RTV silicon rubber
AEC-10026 B72-10367 04
- Technique for increasing yield of trifluoroni-trosomethane-tetrafluorone copolymer
ARC-10566 B72-10418 04
- Phosphonium chloride for thermal storage
ARC-10572 B72-10422 04
- Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04
- Leaching of nitroso rubber material removes uncured polymer
MSC-17185 B72-10449 04
- Chemical modification of poly(p-phenylene) for use in ablative compositions
ARC-10135 B72-10451 04
- Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04
- Functionally terminated liquid nitroso fluorocarbon terpolymers
M-FS-21539 B72-10493 04
- PTFE films with improved flexibility
NPO-12028 B72-10551 04
- Micro-scale crease-and-fold apparatus
NPO-12029 B72-10552 06
- Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06
- Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04
- Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04
- Polyimide bonded graphite fluoride: A new long life solid lubricant coating
LEWIS-11864 B72-10628 04
- Improved lip seal for rotating shafts
LEWIS-11602 B72-10672 07
- Improved zinc oxide thermal control coatings
NPO-11139 B72-10711 04
- Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04
- Monitor for physical property changes in solid propellants
ARC-10702 B73-10130 03
- An improved technique for the use of zinc-rich coatings
KSC-10766 B73-10149 04

Handbook on thermophysical properties of oxygen
LEWIS-11962 B73-10187 04
Materials data handbook on titanium 6Al-4V
M-FS-22796 B73-10372 04
Materials data handbooks on aluminum alloys
M-FS-22798 B73-10373 04
Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04
Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04

PHYSIOLOGICAL EFFECTS
Metabolic breath analyzer
M-FS-21415 B71-10466 05
Ultrastructural alteration of mouse lung by prolonged exposure to mixtures of helium and oxygen
ARC-10929 B75-10061 05

PHYSIOLOGICAL FACTORS
A continuous physiological data collector
M-FS-20835 B72-10402 05

PHYSIOLOGICAL RESPONSES
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
High mobility work station restraint support
MSC-12419 B71-10301 07
New reaction tester accurate within 56 microseconds
MSC-13604 B72-10031 05
Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
Microminiaturized, biopotential conditioning system (MBCS)
JSC-14180 B73-10236 02
Programmable random interval generator
JSC-14131 B73-10367 02

PHYSIOLOGICAL TESTS
Human performance measuring device
LANGLEY-10679 B70-10619 05
Improved ultrasonic biomedical measuring apparatus
ARC-10597 B72-10695 05

PHYSIOLOGY
Psychrometric chart for physiological research
ARC-10394 B71-10470 03

PICRATES
Increasing the sensitivity of the Jaffe reaction for creatinine
NPO-11587 B73-10021 04

PIEZOELECTRIC CRYSTALS
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Fabrication of electroacoustic RF amplifiers
ERC-10266 B70-10460 01
Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05

Piezoelectric transducer mosaic
ARC-10509 B72-10014 01

PIEZOELECTRIC TRANSDUCERS
Piezoelectric transducer
HQ-10548 B70-10157 01
Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06
Solid state variable time delay
ERC-10032 B70-10492 01
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
Piezoelectric transducer mosaic
ARC-10509 B72-10014 01
Gravitational gradiometer measures mass changes
M-FS-20814 B72-10140 03
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07
Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
Piezoelectric relay
GSFC-11627 B74-10089 01
Ultrasonic detection of flaws in large structural areas
MSC-19499 B75-10201 06

PIEZOELECTRICITY
Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Prediction of faults in components of machinery in motion
GSFC-10801 B70-10116 06
Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03
Bimorph piezoelectric device functions as flapper valve
ERC-10082 B70-10382 01
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
Piezoelectric actuator uses sequentially-excited multiple elements: A concept
NPO-11527 B72-10096 01
A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06

PIEZORESISTIVE TRANSDUCERS
New transverse piezoresistance and pinch effect electromechanical transducers - A concept
ERC-10088 B70-10075 01
Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08

PIGMENTS
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Improved thermal paint formulation
M-FS-14706 B71-10180 03
Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04

Study of in-situ degradation of thermal control surfaces
M-FS-20892 B72-10336 04
Investigation of environmental effects on coatings for thermal control
M-FS-21932 B72-10596 04
Improved zinc oxide thermal control coatings
NPO-11139 B72-10711 04
'Dry-column' chromatography of plant pigments
ARC-10780 B73-10271 04

PILOT TRAINING
Virtual-image display system for flight simulators
ARC-10175 B71-10427 03
Roll function in a flight simulator
ARC-10557 B72-10417 02

PILOTS (PERSONNEL)
Attitude controls for VTOL aircraft
XAC-8972 B71-10202 05

PINCH EFFECT
New transverse piezoresistance and pinch effect electromechanical transducers - A concept
ERC-10088 B70-10075 01
Improved plasma accelerator
ARC-10109 B71-10454 03

PINHOLES
Vacuum leak detector features higher sensitivity
ERC-10034 B70-10493 03
A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 B71-10439 02

PINS
Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
Foolproof quick-release locking pin
M-FS-18495 B70-10409 07
Easy insert, easy release toggle bolt fastener
ARC-10140 B70-10509 07
Disc pack cleaning table saves computer time
LANGLEY-10590 B70-10532 09
Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
Repair of brazed steel honeycomb-sandwich panels with vertical pins only
MSC-15831 B70-10624 08
Chatter-free check valve - A concept
MSC-13262 B71-10067 07
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01
High density electronic packaging module with improved cooling assembly
MSC-13639 B71-10088 01
Ultrathin gate valve for high vacuum operation
GSFC-11028 B71-10412 07
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
Tool expedites installation of BNC connectors
ARC-10327 B71-10480 07

SUBJECT INDEX

Electrical grounding bracket
ARC-10041 B72-10045 01

Squib-actuated disconnect device
NPO-11544 B72-10097 06

Positive fast sealing union connections
LEWIS-11290 B72-10133 06

Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 B72-10154 03

Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01

PIONEER SPACE PROBES
Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01

PIONEER 6 SPACE PROBE
Digital aspect clock
ARC-10088 B71-10440 02

PIONEER 7 SPACE PROBE
Digital aspect clock
ARC-10088 B71-10440 02

PIONEER 8 SPACE PROBE
Digital aspect clock
ARC-10088 B71-10440 02

PIONEER 9 SPACE PROBE
An improved telemetry system
ARC-10336 B71-10201 01

PIPE FLOW
Multichamber controllable heat pipe
ARC-10199 B71-10526 03

Use of small turbine-type flowmeters to measure flow in large pipes
LEWIS-11851 B72-10631 06

Fill and vent quick disconnect
M-FS-21822 B72-10645 07

A shut-off valve for flexible tubing
M-FS-21731 B72-10687 07

Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04

PIPE NOZZLES
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07

Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09

PIPELINES
Frost as an insulator
NUC-11039 B70-10593 03

Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07

Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06

Automatic lightning location system
AEC-10077 B72-10372 02

New explosive seam welding concepts
LANGLEY-11211 B73-10180 04

PIPES (TUBES)
Quantitative conversion of water to carbon dioxide
NPO-10731 B70-10013 04

Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07

Economical weatherproof helical antenna
XKS-08485 B70-10016 01

Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02

Adjustable flow restrictor
MSC-13433 B70-10037 07

Split radius-form blocks for tube benders
MSC-15773 B70-10038 08

Spinarc gas tungsten arc torch holder
MSC-15646 B70-10041 08

Electron energy analyzer
HQ-10373 B70-10138 02

Reference for radiographic film interpreters
M-FS-16695 B70-10189 03

Liquid level sensor
M-FS-16648 B70-10219 01

Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04

Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 B70-10273 04

Volumetric leak detector
MSC-11325 B70-10302 07

Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07

Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06

Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07

Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08

Concept for a gas operated actuator
NPO-11340 B70-10516 07

Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07

Miniature spray-painting booth
MSC-15811 B70-10549 03

Special wrench for B-nuts reduces torque stress in tubing
MSC-15885 B70-10550 07

Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07

Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07

The water-cryogen heat exchanger
NUC-11029 B70-10591 03

Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03

Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01

Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03

Compact electric heater
LEWIS-11172 B70-10677 03

Compact fluid-flow restrictor
MSC-15803 B70-10679 07

Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08

Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01

Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08

Torch kit for welding in difficult areas
MSC-15704 B71-10070 08

PIPES (TUBES)

Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08

Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07

Pipe installation technique avoids disturbing work areas
MSC-15581 B71-10093 06

Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06

Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07

Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06

Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08

Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03

Compressed gas handbook
KSC-10662 B71-10272 03

Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08

Hot tap thermowell installation
MSC-12427 B71-10302 07

Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 B71-10337 06

Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09

Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08

Exothermic brazing units
M-FS-21435 B71-10467 08

Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07

Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07

Glass tube splitting tool
MSC-17183 B71-10516 07

Pressure sensitive gas flow meter
ARC-10219 B72-10049 06

Velocity accelerator for particles
NPO-11349 B72-10082 03

Tubing cutter
NPO-11524 B72-10095 07

Longitudinal friction forces in piping design
M-FS-13754 B72-10103 01

Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02

Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03

High-temperature, long-life thyatron
LEWIS-11327 B72-10134 01

Cryogenic gel flow viscometer
ARC-10523 B72-10180 03

Heart catheter cable and connector
ARC-10406 B72-10200 05

Energy absorber uses expanded coiled tube
AEC-10044 B72-10239 06

Pressure-probe assembly for wind tunnels
 ARC-10569 B72-10248 03
 An electrohydrodynamic heat pipe
 ARC-10601 B72-10251 03
 A cryopump for cooling objects at a distance
 LRL-10031 B72-10314 03
 Remote control flare stack igniter for combustible gases
 M-FS-21675 B72-10352 07
 Low cost anti-galling bushings
 LEWIS-11724 B72-10359 08
 Noncontaminating technique for making holes in existing process systems
 LEWIS-11595 B72-10385 07
 Nonsteady flow-direction measurement
 LEWIS-11499 B72-10403 06
 Enhanced Lamb dip for absolute laser frequency stabilization
 HQ-10695 B72-10481 02
 Dry ice plug for hydraulic and pneumatic pipe flushing
 MSC-12548 B72-10496 06
 High-intensity source of extreme ultraviolet
 HQ-10754 B72-10528 03
 Hydrophobic liquid/gas separator for heat pipes
 ARC-10656 B72-10549 03
 Propellant feed systems transients
 MSC-17848 B72-10677 06
 Portable beveling tool
 M-FS-16863 B72-10678 07
 A shut-off valve for flexible tubing
 M-FS-21731 B72-10687 07
 Gas-flow restrictor
 NPO-10117 B72-10703 03
 Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
 MSC-17930 B72-10722 06
 Reduction of porosity in aluminum weldments
 MSC-14198 B72-10734 08
 Method for casting polyethylene pipe
 ARC-10706 B73-10032 08
 Geysering inhibitor pipe
 KSC-10615 B73-10110 07
 Metal tube used as solar engine
 ARC-10461 B73-10493 03
 Grain refinement control in gas-shielded arc welding of aluminum tubing
 JSC-19095 B73-10508 08
 Modular support blocks for fluid lines
 MSC-19335 B74-10023 07
 Automatic soldering machine
 MSC-19401 B74-10193 06
 Explosive welding technique for joining aluminum and steel tubes
 MSC-14721 B74-10272 08
 Low-cost tool set for removing brazed fittings
 NPO-13495 B75-10054 07

PIPETTES
 Combining micro dry column chromatography and mass spectrometry
 NPO-11240 B70-10231 03

PISTON ENGINES
 Simplified heat engine
 NPO-13613 B75-10334 07

PISTONS
 Performance-limit criteria for the design of fast-response servo-actuation systems
 LEWIS-11022 B70-10152 02

Novel valve for reciprocating compressors - Concept
 MSC-15060 B70-10160 07
 Hydraulic brake safety valve
 M-FS-16444 B70-10207 07
 A long-lived precision switch actuator for controlling pump-piston action
 NPO-10757 B70-10279 07
 Efficient pressure-transformer for fluids
 M-FS-20830 B70-10595 07
 Self-sealing, easily purged quick-disconnect hose coupling
 MSC-17009 B70-10699 07
 Peak wind speed anemometer /maxometer/
 M-FS-20916 B71-10023 07
 Pneumatic amplifier controls high pressure fluid supply
 MSC-12121 B71-10081 07
 Hydraulic actuator motion limiter ensures operator safety
 ARC-10131 B71-10233 07
 Tilt table for ergometers and other biomedical devices
 M-FS-21010 B71-10241 05
 Instrument detects bacterial life forms
 GSFC-10972 B71-10312 05
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06
 Proportional pulsed pilot valve
 ARC-10228 B71-10468 07
 Gas chromatograph sample-transfer valve
 ARC-10427 B71-10474 04
 Anemometer calibrator
 M-FS-21424 B71-10519 03
 Gyro spring augmentation system
 ARC-10496 B72-10010 06
 Squib-actuated disconnect device
 NPO-11544 B72-10097 06
 Thermal-powered reciprocating pump
 NPO-11417 B72-10723 06
 Bimetallic devices for stirring fluids
 ARC-10441 B73-10029 06
 Collapsible pistons for light-gas guns
 JSC-13789 B73-10413 07
 Poppet valve tester
 LEWIS-11655 B73-10415 07

PITCH
 Methods for measuring the loudness and noisiness of complex sounds
 HQ-10332 B70-10260 03

PITCH (INCLINATION)
 Modified bubble level senses pitch and roll angles over wide range
 MSC-13506 B71-10085 03
 Strong, easy-to-mold, spiral buttress thread
 LANGLEY-10755 B71-10336 08
 Inertial reference unit
 NPO-11518 B72-10094 02
 Interferometric rotation sensor
 ARC-10278 B72-10274 03
 New design of hingeless helicopter rotor improves stability
 ARC-10807 B75-10132 06

PITCHING MOMENTS
 Prediction of stall characteristics of straight wing aircraft
 LANGLEY-11013 B71-10501 09

PITOT TUBES
 Method of stabilizing fluoric vortex valves and vortex amplifiers
 LEWIS-10553 B70-10668 07

Device measures conductivity and velocity of ionized gas streams
 XAC-05695 B71-10235 03
 A stagnation pressure probe for use in supersonic flow
 LANGLEY-11139 B72-10543 06

PITTING
 Ultrasonic metal etching for metallographic analysis
 LEWIS-11230 B71-10099 04

PIVOTS
 Thermostatic expansion valve improved by dual pneumatic modulation
 KSC-10072 B70-10101 07
 Easy manual operation of overhead garage doors - A concept
 KSC-10555 B70-10543 07
 Flexible pivot mount eliminates friction and hysteresis
 M-FS-20725 B70-10577 07
 Universal inverted flexure
 ARC-10345 B72-10122 07
 Latch mechanism
 M-FS-21606 B72-10457 08

PLANAR STRUCTURES
 Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01
 Array multiplier
 ERC-90076 B70-10047 02
 Applications of gap welding
 M-FS-20715 B70-10155 08
 Ambient-light-absorbing screen for front projection
 ERC-90017 B70-10472 03
 Computing incompressible laminar and turbulent boundary layer formation
 LEWIS-11190 B71-10155 09
 Radial heat flux transformer
 NPO-10828 B71-10311 03
 Topological solution of bilateral switching networks
 ARC-10294 B72-10055 01
 Interconnections for fluidic circuits
 ARC-10481 B72-10164 02
 An inexpensive and effective method for calculating the strength of randomly reinforced fiber composites
 LEWIS-11985 B73-10039 04
 Improved technique for inspection of planar surfaces by microscopy and interferometry
 NPO-11893 B73-10143 03

PLANE WAVES
 Non-symmetrical two dimensional scattering program
 NPO-11576 B71-10007 09
 Symmetrical two dimensional scattering program
 NPO-11578 B71-10008 09

PLANET EPHEMERIDES
 Multibody Interplanetary Swingby Trajectories /MIST-1/
 M-FS-15081 B70-10603 09

PLANETARY ATMOSPHERES
 Electron energy analyzer
 HQ-10373 B70-10138 02
 New microwave spectrometer/imager has possible applications for pollution monitoring
 NPO-10535 B70-10187 03
 Improved high-performance shock tube
 NPO-11885 B72-10242 03
 Extendible probe for atmosphere sampling
 ARC-10829 B74-10054 03

SUBJECT INDEX

Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03

PLANETARY ENVIRONMENTS
Economical phased-array antenna for environmental applications
HQ-10434 B71-10057 02

PLANETARY ORBITS
Rapid analysis of electric propulsion missions
ARC-10430 B72-10299 09

PLANETARY SURFACES
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
Energy absorbing system for mechanical impacts
NPO-10671 B72-10712 06
Microwave emission from granular silicates
NPO-11702 B73-10140 03
Analysis of orbital heat transfer
ARC-10842 B74-10115 02

PLANETS
Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
Planet geometric center tracker
ARC-10084 B71-10445 02

PLANKTON
Dye laser remote sensing of marine plankton
LANGLEY-11382 B73-10359 05

PLANNING
Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09
The Langley Research Center
NASA/PERT TIME III
LANGLEY-11887 B75-10302 09

PLANTS (BOTANY)
Illumination control system
ARC-10527 B72-10167 02
A dual-beam actinic light source for photosynthesis research
ARC-10351 B72-10205 05
'Dry-column' chromatography of plant pigments
ARC-10780 B73-10271 04

PLASMA ACCELERATORS
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03

PLASMA CONDUCTIVITY
Plasma conductivity gage
ARC-10147 B70-10510 03

PLASMA CONTROL
Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03

PLASMA DENSITY
Laser frequency modulation with electron plasma
AEC-10079 B72-10373 03

PLASMA DIAGNOSTICS
Measurement of electron density and temperature in plasmas
ARC-10598 B72-10563 03
Wavelength-selective, sequential Q-switching laser cavity
LANGLEY-11045 B74-10134 03
Apparatus for study of plasmas at elevated temperatures
ARC-10958 B75-10285 03

PLASMA DYNAMICS
Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03
Laser energy converted into electric power
NPO-13308 B73-10353 02

PLASMA ELECTRODES
Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03

PLASMA FLUX MEASUREMENTS
A vacuum chamber feedthrough
M-FS-21133 B73-10152 01

PLASMA GENERATORS
Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03
Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03
Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03

PLASMA GUNS
High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
Improved plasma accelerator
ARC-10109 B71-10454 03

PLASMA HEATING
Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03
Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04
Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04

PLASMA JETS
Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03

PLASMA PHYSICS
Improved electron emitter
LEWIS-10814 B71-10388 03
Advances in induction-heated plasma torch technology
LEWIS-11354 B72-10151 03

PLASMA PROBES
Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01
Plasma conductivity gage
ARC-10147 B70-10510 03

PLASMA PROPULSION
Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields
NPO-11725 B72-10707 03

PLASMA SPRAYING
Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
High-friction mechanical grips
JSC-19260 B73-10234 06
Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
Dielectric films improve life of polymeric insulators
ARC-10892 B75-10084 04

PLASTIC PROPERTIES

PLASMA TEMPERATURE
Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02

PLASMAS (PHYSICS)
High temperature ion source
ERC-10197 B70-10379 03
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04

PLASTERS
Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04

PLASTIC COATINGS
Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06
Improved cover for cadmium sulfide solar cells
LEWIS-11003 B70-10584 01
Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
Development of conformal coating materials
M-FS-21393 B71-10483 04

PLASTIC DEFORMATION
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06
Experimental study of surface cracks
MSC-14032 B72-10019 04
New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
Hydrogen-environment embrittlement of metals: A study
M-FS-22540 B73-10168 04

PLASTIC FLOW
The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
Explosive cord
M-FS-21928 B72-10293 08

PLASTIC PROPERTIES
Flexible protection for metal bellows
KSC-10520 B70-10350 06
Effect of size on cracking of materials
NPO-11602 B71-10158 04
New understanding of fiber composite materials
NPO-11605 B71-10161 04

Analysis of thermal stress and metal movement during welding
M-FS-20984 B72-10333 04
RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
LEWIS-12388 B75-10186 09

PLASTIC TAPES

Microorganism sample device
LANGLEY-10258 B71-10487 05
Thermocouple tape
LEWIS-11072 B72-10515 04

PLASTICS

Fuse and switch functions combined within a single housing
HQ-10497 B70-10003 01
Economical weatherproof helical antenna
XKS-08485 B70-10016 01
Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
Inflatable stretcher to transport patients
HQ-10179 B70-10254 05
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
Strain gage load measuring device - A concept
MSC-13385 B70-10326 01
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
Elimination of gases and contamination from water
KSC-10502 B70-10456 05
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
Orbit, reentry, and landing attachment for globes
LANGLEY-10626 B70-10656 03
Strain gage installation manual
M-FS-18822 B70-10715 06
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06
Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05
Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08

Strong, easy-to-mold, spiral buttress thread
LANGLEY-10755 B71-10336 08
Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03
Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04
Sheet plastic filters for solar cells
NPO-11464 B72-10090 04
An economical vent cover
M-FS-20692 B72-10348 07
Evaluating foam heterogeneity
AEC-10046 B72-10365 04
Built-in bleeder system in laminated plastic structures
MSC-17713 B72-10562 08
A monostrain test apparatus
M-FS-24221 B72-10679 06
Improved mold release for filled-silicone compounds
JSC-19300 B73-10338 04
Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
Apparatus for heat treating plastic belts
NPO-13205 B74-10299 02
Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
Flammability study of materials in oxygen environments
M-FS-23306 B75-10310 04

PLATENS

A new low-expansion nonflammable printed circuit board
M-FS-20408 B70-10154 01
High-speed digital plotter
ARG-90001 B71-10049 02
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07
Film handling system for laser scanner/recorder
MSC-14121 B72-10539 07

PLATES (STRUCTURAL MEMBERS)

Tilt table for ergometers and other biomedical devices
M-FS-21010 B71-10241 05
Viscoelastic cushion for patient support
MSC-12447 B71-10316 05
Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 B71-10460 08
Electromagnetic rheometer
ARC-10525 B72-10416 04
Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06
New explosive seam welding concepts
LANGLEY-11211 B73-10180 04

PLATFORMS

Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Position indicating, rotating boom
LANGLEY-11202 B72-10066 07
Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
Brake for rollable platform
ARC-10512 B74-10045 06

PLATING

Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08
Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 B70-10194 08
Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01
Economical printed circuit front panel for computer use
KSC-10573 B70-10560 01
Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08
Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08
Plating by glass-bead peening
GSFC-11163 B71-10256 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04
A new low-cost method for producing collimating mirrors
LEWIS-11553 B72-10513 08
Fabrication of thick structures by sputtering
LEWIS-12331 B74-10126 08
Induction heating simplifies metal evaporation for ion plating
LEWIS-12595 B75-10288 03

PLATINUM

Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
High energy density electrochemical cell
LEWIS-10969 B70-10151 01
Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
Simple, accurate temperature-measuring instrument
MSC-12327 B70-10303 01
High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04
Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03
Improved reversible coulometer cell
SAN-10051 B71-10176 02
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05

- Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 B72-10127 03
Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
Carbon dioxide concentrator
ARC-10245 B72-10194 05
High-temperature ceramic-to-ceramic seals
ARC-10319 B72-10199 04
Comparison of catalyst activity
ARC-10493 B72-10201 04
Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
Humidity resistant solar cell contacts
HQ-10674 B72-10517 04
Vapor-deposited platinum as a fuel-cell catalyst
M-FS-21317 B73-10475 04
- PLATINUM ALLOYS**
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
- PLATINUM BLACK**
Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
HQ-10565 B70-10035 01
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
Electrolysis cell functions as water vapor dehumidifier and oxygen generator
ARC-10316 B71-10231 01
- PLATINUM COMPOUNDS**
Development of chip passivated monolithic complementary MISFET circuits with beam leads
M-FS-22264 B72-10696 01
- PLAYBACKS**
Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02
- PLENUM CHAMBERS**
Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06
Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07
Two-stage coaxial gas compressor
ARC-10426 B72-10210 06
- PLETHYSMOGRAPHY**
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
- PLOTTERS**
Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03
Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09
Visual sensitivity tester
ARC-10329 B72-10203 05
- Computer program draws
three-dimensional surfaces
LEWIS-10482 B72-10253 09
Snap dynamics
M-FS-21531 B72-10265 09
Digital video display system
NPO-11342 B73-10132 02
- PLOTTING**
Device for printing alphanumeric listings and digital data plots
LEWIS-10954 B70-10002 02
A method for rapidly evaluating the linearity of calibration data
M-FS-14834 B70-10085 03
Null type instrument for simplifying two dimensional field plotting
XLA-08493 B70-10192 01
Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
Simple data-smoothing and noise-suppression technique
M-FS-20803 B70-10627 06
Digital simulation program improved
M-FS-01504 B70-10705 09
AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
High-speed digital plotter
ARG-90001 B71-10049 02
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 B71-10108 09
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 B71-10308 09
Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09
Marshall system for aerospace simulation (MARSYAS)
M-FS-22672 B73-10432 09
Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
Computer program for calculating critical speeds of rotating shafts
LEWIS-11910 B74-10128 09
Computer program for analysis of vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
Method of identifying clusters representing statistical dependencies in multivariate data
ARC-10744 B75-10140 09
General optics evaluation program (GENOPTICS)
GSFC-12038 B75-10294 09
- PLUGGING**
Adjustable flow restrictor
MSC-13433 B70-10037 07
- PLUGS**
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
Hydrophobic liquid/gas separator for heat pipes
ARC-10656 B72-10549 03
Fabrication of porous plugs for control of liquid helium
M-FS-23218 B75-10163 04
- PLUMES**
Airborne spectrometer senses several gases
MSC-13234 B70-10438 03
Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
Handbook for estimating toxic fuel hazards
M-FS-21114 B75-10198 04
Laser-excited fluorescence for measuring atmospheric pollution
NPO-13231 B75-10275 02
- PLUNGERS**
Foolproof quick-release locking pin
M-FS-18495 B70-10409 07
Lightweight S-band helix antenna
KSC-10392 B70-10538 02
Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
Unified hatch system
MSC-15813 B71-10095 06
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Proportional pulsed pilot valve
ARC-10228 B71-10468 07
A cable stabilizer for outdoor elevators
KSC-10513 B72-10283 07
- PLUTONIUM**
The effects of nuclear power generators upon electronic instrumentation
NPO-11217 B70-10272 03
- PLUTONIUM OXIDES**
PPUAS--photopeak unfolding and self-shielding program
NPO-13188 B73-10087 09
- PLUTONIUM 238**
Scintillation detector for carbon-14
ARC-10378 B71-10144 03
- PLYWOOD**
The low-cost cryostat
NUC-11034 B70-10592 03
Holographic nondestructive testing of laminates
JSC-19107 B73-10108 04
- PNEUMATIC CIRCUITS**
Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06
- PNEUMATIC CONTROL**
Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
Precision control system for engine fuel
NPO-12017 B70-10244 07
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
Remote coupling of air lines
NUC-10225 B71-10101 07
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03

- Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05
Integrated monopropellant thruster
NPO-12004 B72-10502 06
- PNEUMATIC EQUIPMENT**
Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
Inexpensive tamper proof safety relief valve
KSC-10470 B70-10320 07
Flueric-controller pneumatic stepping motor system
LEWIS-11051 B70-10332 02
Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 B70-10348 07
Control system for an artificial heart
LEWIS-11057 B70-10469 05
Bidirectional flow meter
M-FS-18737 B70-10589 07
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07
Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Weight simulator
ARC-10100 B72-10046 05
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
Survey of aircraft electrical power systems
LEWIS-11678 B72-10383 02
Controlled flow assembly
M-FS-21716 B72-10404 07
Sterile chamber operation with bio-isolator suit system
LANGLEY-11054 B72-10547 05
High pressure liquid gas pump
MSC-14087 B72-10590 06
Concentric-seating poppet
NPO-11658 B72-10704 06
Fail-safe bidirectional valve driver
NPO-11958 B73-10450 07
Ignition of sounding rocket motors with hand-pumped air
LANGLEY-11152 B74-10202 03
Mechanical rod peening
M-FS-23047 B74-10237 07
- PNEUMATIC PROBES**
Total-pressure measurement in pulsating flows
LEWIS-12077 B73-10252 03
- PNEUMATICS**
Bimorph piezoelectric device functions as flapper valve
ERC-10082 B70-10382 01
Interconnections for fluidic circuits
ARC-10481 B72-10164 02
Simplified heat engine
NPO-13613 B75-10334 07
- PNEUMOGRAPHY**
Biomedical recording system
MSC-13653 B70-10697 05
- POINTING CONTROL SYSTEMS**
Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 B70-10577 07
- POINTS**
Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
- POINTS (MATHEMATICS)**
Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
- POISONS**
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
- POISSON DENSITY FUNCTIONS**
Elimination of redundancy in telemetered data
HQ-10585 B70-10431 06
- POISSON RATIO**
Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01
- POLAR COORDINATES**
Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03
Electronic scanning of 2-channel monopulse patterns
GSFC-10299 B70-10485 02
- POLAR GASES**
Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04
- POLARIMETERS**
Optical bonding agents for severe environments
ARC-10459 B72-10063 04
Low-noise microwave polarimeter
NPO-11512 B73-10134 02
- POLARISCOPES**
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
- POLARITY**
Electrodynamic induction flowmeter
HQ-10230 B70-10024 01
Precision full-wave rectifier
ARC-10101 B70-10161 02
A transformer of closely spaced pulsed waveforms
LEWIS-11045 B70-10351 01
Transistor current and voltage limiting switch
NPO-11166 B70-10414 01
Metal detector system
ARC-10265 B70-10511 01
Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01
Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
Inertial reference unit
NPO-11518 B72-10094 02
Compensation of voltage drops in solid-state switches used with thermoelectric generators
NPO-11388 B72-10138 01
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
- POLARIZATION (CHARGE SEPARATION)**
Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03
Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
- Dual-frequency feed-horn antenna
GSFC-10820 B71-10056 02
A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06
- POLARIZATION (WAVES)**
Less-expensive Rochon prisms
M-FS-20554 B70-10681 03
Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
Improving laser beam coherence - A concept
ARC-10417 B71-10527 03
Acousto-optic filter for electronic laser tuning
HQ-10715 B72-10520 03
- POLARIZED LIGHT**
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
Holographic photography of high velocity particles
ERC-10318 B70-10371 03
Laser velocimeter with transverse and on-axis sensitivity
ARC-10642 B73-10262 03
Optical detection of oil on water
ARC-10649 B73-10268 03
Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03
Developments in spectrophotometry I: An instrument for high-resolution measurements of optical intensity and polarization
NPO-13604 B75-10332 03
- POLARIZED RADIATION**
Two new methods to increase the contrast of track-etch neutron radiographs
LEWIS-11893 B73-10027 03
- POLARIZERS**
Radiometric evaluation of antenna-feed component losses
NPO-11238 B70-10344 02
Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 B71-10232 03
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Improving laser beam coherence - A concept
ARC-10417 B71-10527 03
Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 B72-10440 03
Light-direction sensor based on birefringency
NPO-11201 B73-10131 03
Field-sequential stereo television
MSC-12616 B74-10223 03
- POLAROGRAPHY**
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
- POLICE**
Tone-activated, remote, alert communication system
NPO-11132 B71-10307 02

- Location of vehicles using AM station
broadcasting signals
NPO-13217 874-10300 02
- POLICIES**
Program audit, A management tool
KSC-10557 871-10380 01
- POLISHING**
Technique for depositing silicon dioxide
on indium arsenide improves adhesion
ERC-10130 870-10475 04
Less-expensive Rochon prisms
M-FS-20554 870-10681 03
An improved apochromatic wedge
utilizing optical molecular contact bonding
GSFC-11082 872-10388 03
Machine finishes balls to high degree
of roundness
M-FS-21448 872-10595 08
- POLLUTION**
New microwave spectrometer/imager
has possible applications for pollution
monitoring
NPO-10535 870-10187 03
Rigid open-cell polyurethane foam for
cryogenic insulation
LEWIS-11220 871-10079 04
Data sampling system for monitor and
control station
M-FS-20948 871-10299 02
Combustion products generating and
metering device
GSFC-11095 874-10036 04
Investigations of multiple jets in a
crossflow
LEWIS-12102 875-10149 03
Risk management technique for liquefied
natural gas facilities
KSC-11005 875-10193 04
Developments in spectrophotometry I:
An instrument for high-resolution
measurements of optical intensity and
polarization
NPO-13604 875-10332 03
- POLLUTION CONTROL**
Airfoil disperses smokestack effluents
upward
LANGLEY-11669 875-10074 06
- POLYAMIDE RESINS**
Chemical treatment makes aromatic
polyamide fabric fireproof in oxygen
atmosphere
MSC-13571 870-10540 04
Improved epoxy resin for constructing
cryogenic filament-wound pressure vessels
LEWIS-11261 871-10261 04
Process for preparing polyimide
adhesives
LANGLEY-11397 875-10257 08
- POLYBENZIMIDAZOLE**
New type of nonflammable paper
MSC-13432 870-10546 04
Low-temperature radiation-resistant
material for ball-bearing retainers
NUC-10058 870-10576 04
Liquid-hydrogen/nuclear-radiation
resistant seals
M-FS-21364 871-10340 03
Fabrication techniques for
polybenzimidazole composites
ARC-10724 873-10269 04
Low-density polybenzimidazole foams for
thermal insulation and fire protection
ARC-10823 875-10056 04
- POLYBUTADIENE**
Synthesis of fluorinated organic
compounds using oxygen difluoride
NPO-12061 871-10154 04
- Polymer containing functional end groups
is base for new polymers
NPO-10998 871-10184 04
- POLYCARBONATES**
Photochromism of dihydroquinolines
HQ-10574 870-10574 04
Transparent polymeric laminates
ARC-10783 873-10341 04
- POLYCRYSTALS**
Growth of phase-pure, crack-free single
crystals and large-grained polycrystals of
molybdenum disilicide
HQ-10450 870-10206 04
Preparation of homogeneous vitreous
materials for electronic and optical
devices
HQ-10670 871-10172 04
Shielding method for polycrystalline and
epitaxy growths
M-FS-20162 871-10434 04
Improved synthesis of intermetal
compounds
HQ-10690 872-10172 04
Low-Cost thin-layer silicon solar cells
GSFC-12023 875-10293 04
- POLYESTER RESINS**
Reinforcement of polymeric structures
with asbestos fibrils
HQ-09954 870-10020 03
Computerized polar plots by a cathode
ray tube/grid overlay method
M-FS-14464 870-10311 03
Technique for the integral casting of
pressure instrumentation in wind-tunnel
models
LANGLEY-10812 871-10247 08
- POLYESTERS**
A method for the visual detection of
holes in thin polymeric films
LEWIS-10876 870-10027 04
Low heat-gain cryogenic-liquid transfer
system
MSC-15165 870-10306 07
Solid state bistable power switch
ERC-10290 870-10383 01
Rigid open-cell polyurethane foam for
cryogenic insulation
LEWIS-11220 871-10079 04
Dropouts in magnetic tape recording and
reproduction
NPO-11519 871-10160 03
Fixture for multiple-FCC chemical
stripping and plating
M-FS-20237 871-10420 08
Hot-blade stripper for polyester insulation
on FCC
M-FS-20117 871-10461 08
Production of circular polymer-glass
fabric composites
M-FS-22125 873-10069 04
- POLYETHER RESINS**
Nonflammable organic adhesives
effective over wide temperature range
MSC-13586 870-10644 04
- POLYETHYLENES**
A method for the visual detection of
holes in thin polymeric films
LEWIS-10876 870-10027 04
Shelf and cycle life evaluation of
silver-zinc cells
NPO-11258 870-10214 01
An explosion-proof battery case
MSC-12335 870-10304 01
Evaluation of two designs for cryogenic
insulation
M-FS-14740 870-10415 03
- Hydrogen maser - Measurement of wall
shift with a flexible bulb
HQ-10552 870-10441 03
Preparation of thin polymer films for
infrared reaction rate studies
MSC-15893 870-10551 04
Ultra thin gage plastic film
LEWIS-11276 871-10135 08
Hydrophobic liquid/gas separator for
heat pipes
ARC-10656 872-10549 03
Method for casting polyethylene pipe
ARC-10706 873-10032 08
An improved holographic recording
medium
M-FS-22532 873-10166 09
Highly-visible air-sea rescue marker
MSC-12564 875-10166 05
- POLYGONS**
Nondestructive assessment of
penetration of electron-beam welds
MSC-15955 870-10466 08
- POLYIMIDE RESINS**
A new low-expansion nonflammable
printed circuit board
M-FS-20408 870-10154 01
Polyimide polymers provide improved
ablative materials
LEWIS-10861 870-10300 04
Polyimide polymers provide higher char
yield for graphitic structures
LEWIS-10860 870-10330 04
Flame-resistant thin panels of glass
fabric-polyimide resin laminates
MSC-15562 870-10490 04
Soluble high molecular weight polyimide
resins
LEWIS-11056 870-10504 04
Low-temperature radiation-resistant
material for ball-bearing retainers
NUC-10058 870-10576 04
New polyimide polymer has excellent
processing characteristics with improved
thermo-oxidative and hydrolytic stabilities
LEWIS-11323 872-10175 04
Polyimide foams provide thermal
insulation and fire protection
ARC-10464 872-10300 04
Titanium reinforced boron polyimide
composite
M-FS-21916 872-10353 04
Low-void polyimide resins for autoclave
processing
LEWIS-11665 872-10728 04
Production of circular polymer-glass
fabric composites
M-FS-22125 873-10069 04
Lightweight graphite/polyimide panels
JSC-14375 873-10121 04
Multilayer flat electrical cable
ARC-10734 873-10264 01
Polyimide fiber-glass composite resists
high temperatures
ARC-10782 873-10505 04
Pressure application technique for
high-temperature composite fabrication
LANGLEY-11601 874-10141 08
Fabrication of composite fan blades using
PMR A-type polyimide resin and graphite
fiber reinforcement
LEWIS-12366 875-10066 04
Tailor making high performance graphite
fiber reinforced PMR polyimides
LEWIS-12416 875-10137 04

POLYIMIDES

A method for the visual detection of holes in thin polymeric films

LEWIS-10876 B70-10027 04

Piezoelectric transducer

HQ-10548 B70-10157 01

Improved heat-resistant garments

MSC-12109 B70-10544 08

High-temperature, long-life polyimide seals for hydraulic actuator rods

LEWIS-11212 B71-10098 07

Investigation to identify paint coatings resistive to microorganism growth

M-FS-20458 B71-10310 04

Liquid-hydrogen/nuclear-radiation resistant seals

M-FS-21364 B71-10340 03

Thermally stable polyimides from solutions of monomeric reactants

LEWIS-11325 B71-10442 04

Cold-blade stripper for polyimide and TFE insulation on FCC

M-FS-20115 B71-10460 08

New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities

LEWIS-11323 B72-10175 04

Flexible, low-cost silicon solar cell arrays

LEWIS-11069 B72-10177 02

Development of a polyimide for use as a temperature and solvent resistant sealant

M-FS-21325 B72-10262 04

Synthesis of temperature and solvent-resistant polymers

M-FS-20848 B72-10342 04

Internal capillary insulation for cryogenic tanks

LEWIS-11234 B72-10626 06

Polyimide bonded graphite fluoride: A new long life solid lubricant coating

LEWIS-11864 B72-10628 04

Low-void polyimide resins for autoclave processing

LEWIS-11665 B72-10728 04

A new intermediate for the production of flexible stable polymers

M-FS-22355 B73-10080 04

Preparation of prepreg graphite tape with insoluble polymer

JSC-14313 B73-10084 04

Flammability control for electrical cables and connectors

M-FS-21584 B73-10235 02

Graphite/polyimide laminates with near-zero thermal expansion

JSC-17662 B73-10254 04

Preparing thermoplastic aromatic polyimides

LANGLEY-11372 B73-10319 04

Polyimide fiber-glass composite resists high temperatures

ARC-10782 B73-10505 04

Improved printed-wiring boards for high-reliability circuits

M-FS-23147 B75-10039 01

Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications

LEWIS-12514 B75-10151 06

Lightweight ducts fabricated from reinforced plastics and elastomers

MSC-19482 B75-10173 06

POLYISOBUTYLENE

Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve

NPO-10893 B70-10334 04

POLYMER CHEMISTRY

Improved process for synthesizing anilinosilane compounds

M-FS-14948 B70-10105 04

Fire retardant polyisocyanurate foam

ARC-10280 B72-10269 04

Chemical modification of poly(p-phenylene) for use in ablative compositions

ARC-10135 B72-10451 04

Functionally terminated liquid nitroso fluorocarbon terpolymers

M-FS-21539 B72-10493 04

A new intermediate for the production of flexible stable polymers

M-FS-22355 B73-10080 04

New polymer systems: Chain extension by dianhydrides

NPO-13046 B74-10077 04

Polymer compositions suitable for use in enriched oxygen atmospheres

MSC-14618 B74-10154 04

Flame resistant elastic elastomeric fiber

MSC-14331 B74-10157 04

Polyelectrolytes with high charge density

NPO-11918 B74-10159 04

Polymers used to absorb fats and oils: A concept

NPO-11609 B74-10210 05

Curable polyphosphazenes

M-FS-23134 B75-10038 04

Automated data acquisition and reduction system for torsional braid analyzer

LANGLEY-11578 B75-10073 02

Tailor making high performance graphite fiber reinforced PMR polyimides

LEWIS-12416 B75-10137 04

Process for preparing polyimide adhesives

LANGLEY-11397 B75-10257 08

Diamine curing agents for polyurethanes

LANGLEY-11829 B75-10261 08

Improved polyelectrolyte for ion exchange fibers

NPO-13530 B75-10280 04

A flame-resistant modified polystyrene

MSC-14903 B75-10320 04

Covalent bonding of polycations to small polymeric particles

NPO-13487 B75-10327 04

New urea-absorbing polymers for artificial kidney machines

NPO-13620 B75-10336 04

POLYMER PHYSICS

Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure

M-FS-21930 B72-10476 06

Functionally terminated liquid nitroso fluorocarbon terpolymers

M-FS-21539 B72-10493 04

POLYMERIC FILMS

A method for the visual detection of holes in thin polymeric films

LEWIS-10876 B70-10027 04

Thermoelectric radiometer

ARC-10138 B70-10056 02

Effects of decontamination, sterilization, and thermal vacuum on polymeric products

NPO-11250 B70-10208 04

Intumescent coatings as fire retardants

ARC-10099 B70-10450 04

Improved reinforcement for openings in difficult fabrics

MSC-13554 B70-10489 08

Soluble high molecular weight polyimide resins

LEWIS-11056 B70-10504 04

Electron fractography used to examine nickel-base alloys

M-FS-18649 B70-10571 04

Ultra thin gage plastic film

LEWIS-11276 B71-10135 08

High temperature autoclave vacuum seals

M-FS-21131 B71-10433 08

Insolubilization process increases enzyme stability

ARC-10314 B71-10443 04

Development of conformal coating materials

M-FS-21393 B71-10483 04

Use of thin plastic films at cryogenic temperatures

LEWIS-11047 B72-10038 04

Sheet plastic filters for solar cells

NPO-11464 B72-10090 04

Halogenation of microcapsule walls

ARC-10410 B72-10161 04

Overlay board for control consoles

ARC-10007 B72-10191 02

Impact sensitivity of materials in contact with liquid and gaseous oxygen at high pressure

M-FS-21930 B72-10476 06

PTFE films with improved flexibility

NPO-12028 B72-10551 04

Micro-scale crease-and-fold apparatus

NPO-12029 B72-10552 06

Photoemissive coating

M-FS-22003 B72-10638 08

Reverse-osmosis membranes by plasma polymerization

ARC-10696 B72-10710 04

Effects of environmental exposure on cryogenic thermal insulation materials

LEWIS-12007 B73-10213 04

Film mounting method for thermomechanical analysis

LANGLEY-11330 B75-10072 04

Dielectric films improve life of polymeric insulators

ARC-10892 B75-10084 04

POLYMERIZATION

Polymerization of perfluorobutadiene

NPO-10863 B70-10131 04

A new low-expansion nonflammable printed circuit board

M-FS-20408 B70-10154 01

Preparation of highly fluorinated diols containing ether linkages

NPO-10768 B70-10353 04

Multilayer screen gives cathode ray tube high contrast

ERC-10217 B70-10454 01

Improved high-temperature metal-sheathed cables

NUC-10413 B71-10102 01

Polymer containing functional end groups is base for new polymers

NPO-10998 B71-10184 04

A new metalation complex for organic synthesis and polymerization reactions
 NPO-10313 B71-10210 04
 Statistical characterization of phenolic-novolac structures
 ARC-10393 B71-10255 04
 Polymerization of perfluorobutadiene at near-ambient conditions
 NPO-10447 B71-10291 04
 Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 B71-10303 04
 Thermally stable polyimides from solutions of monomeric reactants
 LEWIS-11325 B71-10442 04
 Insolubilization process increases enzyme stability
 ARC-10314 B71-10443 04
 New primers for adhesive bonding of aluminum alloys
 M-FS-21387 B71-10488 04
 Initiation of polymerization by tetrabutylammonium p-lithiophenoxide
 ARC-10553 B72-10223 04
 Polymeric coatings using electronic excitation
 HQ-10698 B72-10257 04
 Technique for increasing yield of trifluoromethane-tetrafluoroethylene copolymer
 ARC-10566 B72-10418 04
 Free-radical solution-polymerization of trifluoromethane with tetrafluoroethylene
 ARC-10567 B72-10419 04
 Process for synthesizing and formulating condensed ring polymers
 LANGLEY-10423 B72-10473 04
 Photoemissive coating
 M-FS-22003 B72-10638 08
 Reverse-osmosis membranes by plasma polymerization
 ARC-10696 B72-10710 04
 Technique for the polymerization of monomers for PPQ/graphite fiber composites
 LEWIS-11879 B73-10014 04
 New polymer systems: Chain extension by dianhydrides
 NPO-13046 B74-10077 04
 New tooth enamel from brushite crystals
 ERC-10338 B74-10199 05
 Curable polyphosphazenes
 M-FS-23134 B75-10038 04
 Improved ion exchange membrane
 NPO-13309 B75-10117 04
 Liquid ethylene-propylene copolymers
 NPO-13555 B75-10207 04
 Improved polyelectrolyte for ion exchange fibers
 NPO-13530 B75-10280 04
POLYMERS
 Effects of decontamination, sterilization, and thermal vacuum on polymeric products
 NPO-11250 B70-10208 04
 New hyperthermal thermosetting heterocyclic polymers
 LANGLEY-10221 B70-10403 04
 Process for synthesizing a new series of fluorocarbon polymers
 NPO-10862 B70-10453 04
 Preparation of thin polymer films for infrared reaction rate studies
 MSC-15893 B70-10551 04

Filled polymers for bearings and seals used in liquid hydrogen
 LEWIS-10887 B70-10573 04
 Evaluation of polymeric products for use in thermal-vacuum environment
 NPO-11288 B70-10612 04
 Preparation of perfluoropolyether prepolymers
 NPO-10765 B71-10004 04
 Preparation of highly fluorinated polyurethanes
 NPO-10767 B71-10005 04
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 B71-10096 05
 Effects of the thermal sterilization procedure on polymeric products
 NPO-11688 B71-10362 04
 Flame resistant elastic elastomeric fibers
 MSC-13923-4 B72-10005 04
 Zero-leakage valves
 ARC-10506 B72-10024 06
 Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02
 Devolatilization of polymer resins
 GSFC-11358 B72-10280 04
 A new vibration dampening adhesive
 MSC-17668 B72-10284 04
 Improved thermally conducting electron transfer polymers
 GSFC-11304 B72-10291 04
 Synthesis of temperature and solvent-resistant polymers
 M-FS-20848 B72-10342 04
 Titanium reinforced boron polyimide composite
 M-FS-21916 B72-10353 04
 Thermally resistant polymers for fuel tank sealants
 M-FS-21232 B72-10358 04
 Polymeric binder for explosives
 AEC-10062 B72-10366 04
 Bondability of RTV silicon rubber
 AEC-10026 B72-10367 04
 Strengthening lightweight concrete
 AEC-10017 B72-10430 04
 Leaching of nitroso rubber material removes uncured polymer
 MSC-17185 B72-10449 04
 Preparation of stable colloidal dispersions in fluorinated liquids
 HQ-10580 B72-10529 04
 Method for estimating solubility parameter
 NPO-11647 B73-10022 04
 Self-sterilizing polymers
 M-FS-22054 B73-10090 04
 Low-resistivity homogeneous elastomers
 NPO-11881 B73-10349 04
 Cushion module for stowing electronic equipment
 ARC-10779 B74-10073 04
 Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
 LEWIS-12366 B75-10066 04
 Film mounting method for thermomechanical analysis
 LANGLEY-11330 B75-10072 04
POLYMETHYL METHACRYLATE
 Water surface depth instrument
 LANGLEY-10576 B70-10103 07
 Photochromism of dihydroquinolines
 HQ-10574 B70-10574 04

POLYTETRAFLUOROETHYLENE

POLYNOMIALS

Polynomial-smoothing and derivative-estimating formulas for functions of one or two independent variables
 NPO-11256 B70-10078 09
 A topological approach to computer-aided sensitivity analysis
 ARC-10214 B71-10164 02
 Hybrid computer techniques for solving partial differential equations
 M-FS-21386 B71-10424 09
 Third order digital-to-analog converter
 MSC-12458 B72-10030 02
 Computer program for fitting low-order polynomial splines by method of least squares
 LEWIS-11651 B72-10585 09
 Computer program to determine roots of polynomials by ratio of successive derivatives
 LEWIS-11809 B73-10244 09
 Minimal hardware, binary sequence pseudonoise generator and detector
 NPO-11406 B73-10292 01

POLYPHENYLS

Chemical modification of poly(p-phenylene) for use in ablative compositions
 ARC-10135 B72-10451 04

POLYPROPYLENE

High energy density electrochemical cell
 LEWIS-10969 B70-10151 01
 Welded polypropylene liners for large descaling tanks
 M-FS-18711 B71-10012 07
 Water electrolysis module
 ARC-10246 B71-10203 03
 Novel dielectric reduces corona breakdown in ac capacitors
 M-FS-21486 B72-10505 01
 Highly-visible air-sea rescue marker
 MSC-12564 B75-10166 05

POLYQUINOXALINES

Technique for the polymerization of monomers for PPQ/graphite fiber composites
 LEWIS-11879 B73-10014 04

POLYSACCHARIDES

Immobilized phosphorylase for synthesis of polysaccharides from glucose
 ARC-10680 B72-10550 04

POLYSTYRENE

Phenolic cutter for machining foam insulation
 M-FS-14170 B70-10089 07
 Microwave cryogenic thermal-noise standards
 NPO-11424 B71-10139 03
 Inexpensive, large-diameter, radar tracking and calibration spheres
 XLA-11154 B71-10190 01
 Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 B71-10475 05
 Covalent bonding of antibodies of polystyrene latex beads: A concept
 MSC-13906 B72-10006 05
 A flame-resistant modified polystyrene
 MSC-14903 B75-10320 04

POLYTETRAFLUOROETHYLENE

Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 B70-10021 01
 Mounting, support, and isolation of various components of a hydrogen maser
 HQ-10563 B70-10032 02

- Mechanism of operation of the TFE-bonded gas-diffusion electrode
 HQ-10536 B70-10059 01
 New electrocatalysts for hydrogen-oxygen fuel cells
 HQ-10537 B70-10145 01
 Preparation of fine-particles at cryogenic temperatures
 NPO-10250 B70-10182 04
 Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
 MSC-13174 B70-10277 01
 Improved linings for integrating spheres
 MSC-12237 B70-10413 03
 Hydrogen maser - Measurement of wall shift with a flexible bulb
 HQ-10552 B70-10441 03
 Miniature spray-painting booth
 MSC-15811 B70-10549 03
 Low-temperature radiation-resistant material for ball-bearing retainers
 NUC-10058 B70-10576 04
 Improved burst disk/cutter assembly
 KSC-10516 B70-10583 07
 Rugged, low-conductance, heat-flow probe
 MSC-13443 B70-10622 03
 Preparation of perfluoropolyether prepolymers
 NPO-10765 B71-10004 04
 Preparation of highly fluorinated polyurethanes
 NPO-10767 B71-10005 04
 Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04
 Plating by glass-bead peening
 GSFC-11163 B71-10256 08
 Cold-blade stripper for polyimide and TFE insulation on FCC
 M-FS-20115 B71-10460 08
 Zero-leakage valves
 ARC-10506 B72-10024 06
 Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02
 Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
 LANGLEY-10940 B72-10115 04
 Micro regulating ball valve
 ARC-10295 B72-10121 06
 Nonflammable and abrasion resistant coating process for glass fibers
 MSC-14024 B72-10445 08
 Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04
- POLYURETHANE FOAM**
 Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
 M-FS-20561 B70-10012 06
 Phenolic cutter for machining foam insulation
 M-FS-14170 B70-10089 07
 Open-celled polyurethane foam
 KSC-10517 B70-10349 04
 Strain compatibility tests for sprayed foam cryogenic insulation
 M-FS-16063 B70-10423 04
 The low-cost cryostat
 NUC-11034 B70-10592 03
 Lightweight, self-evacuated insulation panels
 LEWIS-90361 B70-10646 03
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 B71-10079 04
- Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 Nondestructive testing of bond integrity in foam insulation/aluminum composites
 M-FS-20786 B71-10507 06
 Method of determining thermal conductivity in multi-layer insulation systems
 M-FS-20213 B72-10154 03
 High strength, medium density molded foam
 AEC-10053 B72-10235 04
 Fire retardant polyisocyanurate foam
 ARC-10280 B72-10269 04
 Inexpensive lightweight mirror
 MSC-14615 B74-10155 05
 Metallized polymeric foam material
 ARC-10860 B74-10218 04
 Moisture-resistant baffle material for fuel tanks
 ARC-10861 B74-10219 04
 Fiber-modified polyurethane foam for ballistic protection
 ARC-10714 B75-10062 04
 Cryogenic line insulation made from prefabricated polyurethane shells
 MSC-19523 B75-10110 06
- POLYURETHANE RESINS**
 Preparation of highly fluorinated diols containing ether linkages.
 NPO-10768 B70-10353 04
 Nonflammable organic adhesives effective over wide temperature range
 MSC-13586 B70-10644 04
 Preparation of perfluoropolyether prepolymers
 NPO-10765 B71-10004 04
 Preparation of highly fluorinated polyurethanes
 NPO-10767 B71-10005 04
 Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07
 Synthesis of a new class of highly fluorinated aliphatic diisocyanates
 M-FS-20883 B71-10300 04
 Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04
 Adhesive for aluminum withstands cryogenic temperatures
 M-FS-16848 B72-10346 04
 New type of trifunctional alcohol
 NPO-10714 B72-10553 04
 Diamine curing agents for polyurethanes
 LANGLEY-11829 B75-10261 08
- POLYVINYL CHLORIDE**
 Medical vest broadens treatment capability
 KSC-10577 B70-10529 05
 Welded polypropylene liners for large descaling tanks
 M-FS-18711 B71-10012 07
 Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02
 Reduction of porosity in aluminum weldments
 MSC-14198 B72-10734 08
- PONTRYAGIN PRINCIPLE**
 Global search algorithm for optimal control
 ARC-10359 B70-10637 09
- POPULATION THEORY**
 A mathematical model of the effect of a predator on species diversity
 NPO-11230 B70-10006 05
- PORCELAIN**
 Refractory porcelain enamel
 passive-thermal-control coating for high-temperature superalloys
 M-FS-22324 B73-10215 04
- POROSITY**
 Mechanism of operation of the TFE-bonded gas-diffusion electrode
 HQ-10536 B70-10059 01
 Rigid open-cell polyurethane foam for cryogenic insulation
 LEWIS-11220 B71-10079 04
 Interpretation of aluminum-alloy weld radiography
 M-FS-20943 B71-10206 08
 Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07
 Evaluation of omniweave reinforcement for composite fabrication
 M-FS-20946 B71-10245 04
 Modification of physical properties of freeze-dried rice
 MSC-13540 B71-10259 04
 Modifications to a vacuum assisted filtering device to minimize contamination
 MSC-13733 B71-10277 04
 Ion plating seals microcracks or porous metal components
 LEWIS-11657 B72-10397 04
 Humidity resistant solar cell contacts
 HQ-10674 B72-10517 04
 A new method for the determination of thin film porosity
 HQ-10673 B73-10286 01
 Corrugated battery electrode
 GSFC-11368 B73-10515 01
 Honeycomb battery plaque
 GSFC-11367 B73-10519 01
- POROUS MATERIALS**
 Foaming-electrolyte fuel cell
 HQ-10147 B70-10097 01
 Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 B70-10106 03
 Open-celled polyurethane foam
 KSC-10517 B70-10349 04
 Methyl alcohol used as penetrant inspection medium for porous materials
 NUC-10419 B71-10103 06
 Water purification by reverse osmosis using heterocyclic polymer membranes
 LANGLEY-10514 B72-10230 04
 Flow equation for porous plug and capillary tube flow restrictors
 GSFC-11387 B72-10289 06
 Stabilization of porous glass reverse-osmosis membranes
 ARC-10646 B72-10309 04
 Thermal conductivity and electrical resistivity of porous materials
 LEWIS-11754 B72-10587 04
 Reduction of porosity in aluminum weldments
 MSC-14198 B72-10734 08
 Joining porous components to solid metal structures
 LEWIS-11259 B72-10754 08
 Noise suppressor
 LANGLEY-11141 B74-10261 03
 Fabrication of porous plugs for control of liquid helium
 M-FS-23218 B75-10163 04

- Reconstituted asbestos matrix for fuel cells
MSC-12568 B75-10339 04
- POROUS PLATES**
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04
- POROUS WALLS**
Porous surface microphone for measuring acoustic signals in turbulent windstreams
ARC-10776 B73-10490 03
- PORTABLE EQUIPMENT**
Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05
Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08
Low-cost orbiting grinder for cutting ducts
M-FS-20684 B70-10126 07
Burst synchronization detection system
MSC-90317 B70-10159 02
Volumetric leak detector
MSC-11325 B70-10302 07
Universal router concept
M-FS-20756 B70-10313 07
Portable vibration exciter
KSC-10069 B70-10339 07
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08
Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 B70-10680 03
Hobel stripper for shielded and unshielded flat conductor cable
M-FS-20120 B71-10060 08
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Portable lightweight bandsaw
M-FS-16927 B71-10237 07
Portable circuit-interruption indicator
KSC-10546 B71-10246 02
Cable insulation cut-through tester
M-FS-20114 B71-10459 08
Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 B71-10460 08
Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07
Portable beveling tool
M-FS-16863 B72-10678 07
An efficient prebreathing apparatus for humans during decompression
MSC-14151 B72-10690 05
- PORTABLE LIFE SUPPORT SYSTEMS**
Regenerable metallic oxide systems for removal of carbon dioxide: A concept
ARC-10570 B72-10420 04
- PORTS (OPENINGS)**
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Wall attachment, fluoric crossover
"AND" gate
XLA-07391 B71-10178 07
Ultrathin gate valve for high vacuum operation
GSFC-11028 B71-10412 07
Liquid-fuel valve with precise throttling control
NPO-10808 B71-10449 07
Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
Distribution and metering system for soil samples
ARC-10429 B71-10481 07
Diatom infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07
- POSITION (LOCATION)**
Laser method for finding axis of rotation
ARC-10388 B70-10439 03
Expanded sun-look angle program
MSC-13176 B70-10602 09
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 B70-10603 09
Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03
Eye point-of-regard system
ARC-10360 B71-10476 05
A magnetic mouse activity meter
HQ-10664 B72-10482 05
Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
Particle impact location detector
GSFC-11829 B74-10230 03
Location of vehicles using AM station broadcasting signals
NPO-13217 B74-10300 02
Time-of-arrival lightning activity location system
KSC-11006 B75-10297 02
- POSITION ERRORS**
Adaptive position control loop
ARC-10255 B72-10052 02
- POSITION INDICATORS**
Electronic position indicator for latching solenoid valves
LEWIS-10926 B70-10174 01
Orbit, reentry, and landing attachment for globes
LANGLEY-10626 B70-10656 03
Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03
Automatic lightning location system
AEC-10077 B72-10372 02
- POSITIONING**
Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08
- Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08
Multiedge splitter for FCC
M-FS-20112 B71-10457 08
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
Modified camera records lens settings on film
MSC-12363 B71-10494 03
Optical alignment of electrodes on electrical discharge machines
XAC-09489 B72-10036 07
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
- POSITIONING DEVICES (MACHINERY)**
Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06
Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
Low-friction ball-and-socket
NPO-11348 B72-10081 08
Ball detent mechanism
M-FS-21735 B72-10470 07
Mechanical positioning device for Langmuir probe
NPO-11626 B73-10034 06
Magnetic particle clutch controls servo system
JSC-17136 B73-10041 06
Motor-driven rack-positioning device
ARC-10864 B75-10058 06
- POSITIVE FEEDBACK**
Active resistance capacitance filter design
ARC-10020 B70-10034 01
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
Wein bridge oscillator circuit
MSC-13686 B71-10089 01
Multiloop distributed RC active networks
ARC-10200 B71-10177 01
Oscillator with wide dynamic tuning range
GSFC-11086 B71-10286 01
Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02
- POSTFLIGHT ANALYSIS**
Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09
- POTABLE WATER**
Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
MSC-17153 B71-10097 04
A silver ion water sterilization system
MSC-15734 B71-10278 04
Mercury in the environment
AEC-10048 B72-10233 05
Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05

POTASSIUM

Iodine generator for disinfecting reclaimed water
MSC-14632 B74-10153 05

POTASSIUM

Investigation of positive shaft seals
M-FS-18589 B70-10176 07
Condensation of wet vapors in turbines
NPO-10773 B70-10613 09

POTASSIUM BROMIDES

High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03

POTASSIUM CHLORIDES

Al/Ci2 molten salt battery
HQ-10696 B72-10527 01

POTASSIUM CHROMATES

Determination of nitrogen in titanium nitride
LEWIS-11046 B70-10588 04

POTASSIUM COMPOUNDS

Suppression of zinc dendrites in zinc electrode power cells
HQ-10550 B70-10434 02
Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Space-suit carbon dioxide absorption system: A concept
ARC-10546 B72-10168 05
Carbon dioxide concentrator
ARC-10245 B72-10194 05
Potassium food supplement
JSC-14391 B73-10177 05
Ultraviolet reflective coating
GSFC-11786 B73-10469 04

POTASSIUM HYDROXIDES

Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
MSC-13174 B70-10277 01
Water electrolysis module
ARC-10246 B71-10203 03

POTASSIUM PHOSPHATES

A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02

POTASSIUM SILICATES

Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Improved thermal paint formulation
M-FS-14706 B71-10180 03
Improved fire-resistant coatings
GSFC-10072 B71-10198 04

POTENTIAL ENERGY

New transverse piezoresistance and pinch effect electromechanical transducers - A concept
ERC-10088 B70-10075 01

POTENTIAL FLOW

Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
Computer programs for calculating potential flow in propulsion system inlets
LEWIS-12152 B75-10018 09

POTENTIOMETERS

Comparison of catalyst activity
ARC-10493 B72-10201 04

POTENTIOMETERS (INSTRUMENTS)

Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01
Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
Thumb-actuated control device
ARC-10019 B70-10407 01
Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
Automatic reference level control for an antenna pattern recording system
M-FS-20257 B71-10014 01
Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
Calibration-interval adjustment indicator - A concept
M-FS-18693 B71-10309 01
Voltage regulator dissipates minimal power and functions as a voltage divider
B71-10367 01
Eye point-of-regard system
ARC-10360 B71-10476 05
Improved orthopedic arm joint
M-FS-21611 B71-10485 05
Hand-held photomicroscopy system
ARC-10468 B72-10190 03
Signal conditioner for potentiometer type transducers
LEWIS-11822 B73-10015 01

POTENTIOMETERS (RESISTORS)

Liquid level sensor
M-FS-16648 B70-10219 01
Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01
Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Stored program concept for analog computers
M-FS-20874 B71-10240 09
Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Improved device measures performance of batteries under load
ARC-10252 B72-10051 02
Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01

Voltage-tunable parallel-T filter for remote operation
NPO-11165 B72-10077 01
Heart simulator
M-FS-21609 B72-10131 02
Potentiometer, constant tension and lubrication device
KSC-10723 B72-10541 02

POTTING COMPOUNDS

Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
Devolatilization of polymer resins
GSFC-11358 B72-10280 04
Nonflammable potting-encapsulating and conformal coating compounds
JSC-14164 B73-10102 04
RF shielded connectors
GSFC-11215 B73-10509 01

POWDER (PARTICLES)

High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08
Improved method of using paraformaldehyde as a disinfectant
MSC-15887 B71-10096 05
Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04
Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04

POWDER METALLURGY

Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 B71-10489 04
High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04
Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04
Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
MSC-14247 B72-10616 08
Densification of powder metallurgy billets by a roll consolidation technique
LEWIS-11395 B73-10040 08
Autoclave heat treatment for prealloyed powder products
LEWIS-11953 B73-10172 04
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04

POWDERED ALUMINUM

Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03

POWER AMPLIFIERS

Block-coded communications
NPO-11397 B70-10242 02
Power semiconductor device with negative thermal feedback
HQ-10577 B70-10262 01

- P-I-N diode switch
GSFC-10661 870-10278 01
- Metal detector system
ARC-10265 870-10511 01
- Electronic ripple indicator
KSC-10162 871-10170 01
- Discrete-component S-band power amplifier
GSFC-11248 871-10365 01
- Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 871-10477 05
- Improved audio reproduction system
ARC-10404 872-10059 01
- A differential ECG amplifier with single-ended output
ARC-10411 872-10061 05
- A brushless dc spin motor for momentum exchange altitude control
M-FS-14952 872-10448 02
- Remote measurement of the water content of snowpacks
ARC-10651 872-10567 03
- Automatic method of measuring silicon-controlled-rectifier holding current
LEWIS-11898 872-10752 02
- Isolated output for class-D dc amplifiers
M-FS-21616 873-10331 02
- POWER CONDITIONING**
Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 871-10069 01
- Peak-power-point monitor for solar panel
NPO-11708 872-10694 02
- Comparative performance of double-focus and quadrupole mass spectrometers
NPO-11689 872-10702 03
- Signal conditioner for potentiometer type transducers
LEWIS-11822 873-10015 01
- Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 874-10022 03
- POWER EFFICIENCY**
Temperature-controlled fluidic device A concept
HQ-10446 870-10167 03
- Efficient/reliable dc-to-dc inverter circuit
XGS-06226 870-10425 01
- Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 874-10209 01
- POWER GAIN**
Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 870-10181 01
- POWER LIMITERS**
Nonvolatile read/write memory element - A concept
GSFC-10994 871-10347 01
- Voltage regulator dissipates minimal power and functions as a voltage divider
871-10367 01
- Wideband wattmeter for instant measurement of real power
LEWIS-11698 872-10737 01
- POWER LINES**
Fluorescent color coding of power receptacles
MSC-19504 875-10109 01
- POWER PLANTS**
Estimating carbon monoxide exposure
MSC-17211 871-10319 04
- Hydraulic modeling of heat dispersion in large lakes
AEC-10003 872-10039 03
- Large-scale solar thermal collector concepts
M-FS-23167 875-10098 03
- POWER REACTORS**
Saturable-reactor motor starter reduces line voltage fluctuations
M-FS-18921 871-10013 01
- Computer program optimizes design of nuclear radiation shields
LEWIS-10998 871-10400 09
- POWER SPECTRA**
Acoustic spectral analysis and testing techniques
NPO-11554 872-10341 03
- A study of the power spectral density of an FM signal
M-FS-21070 872-10361 02
- Program to determine space vehicle response to wind turbulence
M-FS-21614 872-10410 09
- Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 872-10579 05
- Spectral Analysis Program (SAP)
JSC-14310 873-10227 09
- Power spectrum analysis of staggered quadrupole-shift-keyed signals
MSC-14865 875-10318 09
- POWER SUPPLIES**
Electronic strain-level counter
LANGLEY-10756 870-10716 02
- Cine recording ophthalmoscope
ARC-10399 872-10189 05
- Low cost uniform heat source
LEWIS-11903 873-10011 02
- 100-ampere-hour NiCd battery system
MSC-14774 875-10233 01
- POWER SUPPLY CIRCUITS**
Passive heat transfer control
HQ-10041 870-10111 03
- Constant current source for converting absolute temperatures to analog voltages
NPO-10733 870-10164 02
- Voltage regulator with multiple parallel power source sections
GSFC-10891 870-10195 02
- Two terminal current limiter
NPO-11350 870-10232 01
- Power semiconductor device with negative thermal feedback
HQ-10577 870-10262 01
- Integrated circuit random-access memory decoder
ERC-10211 870-10372 01
- Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 870-10374 09
- Efficient/reliable dc-to-dc inverter circuit
XGS-06226 870-10425 01
- Filler-wire positioner for electron beam welding
MSC-15637 870-10604 08
- Computerized toroidal transformer design
NPO-11115 870-10606 09
- Small, efficient power supply for xenon lamps
MSC-13637 870-10684 01
- Circuit controls turn-on current
NPO-11339 872-10079 01
- Speed enhancement of complementary MOS devices
ARC-10387 872-10184 01
- A rapid, precise, reciprocating-movement color filter system
GSFC-11255 872-10497 07
- Waveguide switch protector
NPO-11592 872-10705 01
- Voltage monitoring system
KSC-10736 875-10154 02
- High-voltage stepping supply with fast settling time
GSFC-11844 875-10191 02
- POWER TRANSMISSION**
Transmission of optical frequencies with minimal losses
HQ-10541 872-10389 03
- PRANDTL NUMBER**
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 871-10037 09
- PREAMPLIFIERS**
Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 870-10055 03
- Thermoelectric radiometer
ARC-10138 870-10056 02
- Reduction of background in an X-ray proportional counter
HQ-10253 870-10169 02
- Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 870-10447 05
- Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 870-10508 01
- A radiometric method for measuring the insertion loss of radome materials
NPO-11423 870-10519 02
- RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 870-10664 02
- Performance evaluation system for inertial navigation equipment
MSC-13542 871-10087 02
- Multichannel intercom with simultaneous send/receive capability
M-FS-18808 871-10228 02
- A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 871-10329 05
- Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 871-10477 05
- Instrument accurately measures stress loads in threaded bolts
M-FS-21121 871-10486 01
- Pulse excitation of bolometer bridges
ARC-10292 872-10054 01
- Lightweight, broad-band spectrum analyzer
ARC-10405 872-10060 01
- Differential input preamplifier
ARC-10489 872-10165 01
- Wide-range dynamic pressure sensor
ARC-10263 872-10196 03
- Active tuning circuit
GSFC-11340 873-10334 02
- Bio-isolated DC operational amplifier
ARC-10596 874-10112 01
- PRECESSION**
Wide-range nuclear magnetic resonance detector
LEWIS-11513 872-10478 03

PRECIPITATION (CHEMISTRY)

Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04

PRECIPITATION HARDENING

Rene 41 heat treatment electron microscopy
M-FS-18633 B70-10081 04

Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04

Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04

The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04

Flexible electrical conductors for high-temperature switchgear
LEWIS-11109 B70-10569 01

High-strength magnetic materials
LEWIS-10697 B70-10596 03

Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04

Joining precipitation-hardened nickel-base alloys by friction welding
LEWIS-11514 B72-10288 08

Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04

PRECISION

Adjustable drill bar replaces complex jigs
MSC-15624 B70-10547 07

Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02

Calibration-interval adjustment indicator - A concept
M-FS-18693 B71-10309 01

PREDICTION ANALYSIS TECHNIQUES

System availability management technique for reliability and maintainability analysis
KSC-10315 B70-10063 09

Design and development criteria for metal bellows
M-FS-20640 B70-10125 05

Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
M-FS-20556 B70-10598 06

Microbial burden prediction model program
NPO-11709 B71-10401 09

Sunspot analysis and prediction
M-FS-21724 B72-10317 03

Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03

PREDICTIONS

Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09

Predicting service life margins
M-FS-24015 B71-10194 06

Teardown analysis for detecting shelf-life degradation
M-FS-24017 B71-10195 04

Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09

Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
LEWIS-12502 B75-10138 03

Time-of-arrival lightning activity location system
KSC-11006 B75-10297 02

PREFLIGHT ANALYSIS

Latching overcurrent circuit breaker
NPO-11131 B70-10524 01

Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09

PRELAUNCH TESTS

Program to determine space vehicle response to wind turbulence
M-FS-21614 B72-10410 09

PREPOLYMERS

Polymerization of perfluorobutadiene
NPO-10863 B70-10131 04

Difunctional polyisobutylene prepared by polymerization of monomer on molecular sieve
NPO-10893 B70-10334 04

Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 B70-10551 04

Preparation of perfluoropolyether prepolymers
NPO-10765 B71-10004 04

Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04

Statistical characterization of phenolic-novolak structures
ARC-10393 B71-10255 04

Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03

Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04

New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04

Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04

Glass transition temperatures of liquid prepolymers obtained by thermal penetrometry
NPO-11730 B73-10036 04

TLC determination of functionality in prepolymers
NPO-11731 B73-10037 04

PRESERVATIVES

Stabilization of lactate dehydrogenase
ARC-10415 B72-10062 05

PRESERVING

The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05

Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05

Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05

Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05

Control of nonenzymatic browning in intermediate-moisture foods
MSC-14835 B75-10317 05

PRESSURE

Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03

Fast-acting, four-way slide valve
M-FS-18608 B70-10228 07

Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01

Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07

Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 B70-10394 06

Pilot-booster control valve
M-FS-20635 B70-10558 07

Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06

Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07

Low-noise flow valve for air ducts
MSC-13441 B70-10640 07

Thermal conductivity of gaseous and liquid hydrogen
NUC-10558 B71-10105 04

Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01

Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07

Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09

Hot tap thermowell installation
MSC-12427 B71-10302 07

Reduction of valve leakage - A concept
NPO-12003 B71-10315 07

Contact-resistance test probes: A concept
M-FS-18891 B71-10471 01

Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09

An improved aesthesiometer
MSC-13609 B72-10032 05

Weight simulator
ARC-10100 B72-10048 05

High-temperature, long-life thyratron
LEWIS-11327 B72-10134 01

Heart catheter cable and connector
ARC-10406 B72-10200 05

Balanced-bellows spirometer
XAC-01547 B72-10279 05

Multipurpose top for liquid helium Dewar
ARC-10533 B72-10302 03

An economical vent cover
M-FS-20692 B72-10348 07

Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07

Low frequency sinusoidal pressure generator
LEWIS-11465 B72-10477 01

Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04

Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01

Sensor capsule for diagnosis of gastric disorders
HQ-10767 B72-10531 05

Leak test system
M-FS-21788 B72-10576 06

SUBJECT INDEX

Analysis and computer programs to calculate acoustic wave properties of baffled chambers

LEWIS-11529 872-10577 09

Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows

LEWIS-11635 872-10586 09

High strength high modulus ceramic fiber

M-FS-21266 872-10592 04

Machine finishes balls to high degree of roundness

M-FS-21448 872-10595 08

Thermal induced flow oscillations in heat exchangers for supercritical fluids

M-FS-21262 872-10598 06

Study of high altitude plume impingement

M-FS-21414 872-10601 09

Linear accelerator: A concept

KSC-10618 872-10636 06

Fluid operated quick release mechanism

M-FS-20205 872-10640 07

Quick-donning backpack harness

LANGLEY-10102 872-10641 05

PRESSURE BREATHING

Aircrew oxygen system

ARC-10247 872-10195 05

An efficient prebreathing apparatus for humans during decompression

MSC-14151 872-10690 05

Programmed-pressure air supply for positive-pressure breathing system

ARC-10845 874-10075 05

PRESSURE CHAMBERS

High amplitude sinusoidal pressure generator

LEWIS-11241 870-10635 07

Resonant systems for dynamic evaluation of pressure transducers

HQ-10609 870-10692 07

Proportional pulsed pilot valve

ARC-10228 871-10468 07

Gas chromatograph sample-transfer valve

ARC-10427 871-10474 04

Propellant-powered actuator for gas generators

ARC-10484 872-10008 03

PRESSURE DISTRIBUTION

Computer program for analysis of flow across a gas turbine seal

LEWIS-10975 870-10317 09

Flow characteristics of an air jet impinging on a flat surface

LEWIS-11129 870-10670 03

Variable-area nozzle automatically controls fluid flow

LEWIS-11217 871-10222 07

Hermetically sealed motion transmitter

MSC-17348 871-10328 07

Low cost, logarithmic mass flow computer

LEWIS-11001 871-10407 06

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors

NPO-11800 871-10532 09

Flow equation for porous plug and capillary tube flow restrictors

GSFC-11387 872-10289 06

Constant tension device for gravity simulation

M-FS-21618 872-10466 06

Thermal contact resistance in a non-ideal joint

M-FS-21775 873-10105 03

Computer program to determine pressure distributions and forces on blunt bodies of revolution

LANGLEY-11197 873-10362 09

PRESSURE DROP

Atmospheric composition affects heat- and mass-transfer processes

HQ-10271 870-10094 04

Design method for adsorption beds

HQ-10269 870-10294 04

Cryogenic gel flow viscometer

ARC-10523 872-10180 03

Airlock caution and warning system

M-FS-21576 872-10467 02

Optimization of fluid line sizes with pumping power penalty IBM-360 computer program

MSC-17930 872-10722 06

Pressure drop and pumping power for fluid flow through round tubes

M-FS-24172 873-10186 09

PRESSURE EFFECTS

Temperature-controlled fluidic device A concept

HQ-10446 870-10167 03

Stability of structural rings under uniformly distributed radial loads

NPO-11396 870-10236 06

Precision control system for engine fuel

NPO-12017 870-10244 07

Biological handbook for engineers

M-FS-20349 870-10255 05

Short-duration, transonic flow, variable-porosity test section

M-FS-20509 870-10256 03

Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen

M-FS-18753 870-10364 04

Testing of brazed and welded connections of stainless-steel tubing

M-FS-20806 870-10417 08

X-connectors for tubing - Feasibility study

M-FS-20827 870-10418 07

Synthesis of diamonds

M-FS-20698 870-10513 08

Filled polymers for bearings and seals used in liquid hydrogen

LEWIS-10887 870-10573 04

Low-temperature radiation-resistant material for ball-bearing retainers

NUC-10058 870-10576 04

The water-cryogen heat exchanger

NUC-11029 870-10591 03

Stainless steel 301 and Inconel 718 hydrogen embrittlement

MSC-13557 870-10621 04

Adjustable support spring

ARC-10203 870-10636 07

Twin-spool turbopumps for "low" net positive suction pressure operations

LEWIS-11105 870-10671 07

Self-sealing, easily purged quick-disconnect hose coupling

MSC-17009 870-10699 07

Fast peak selector for mass spectrometer

LANGLEY-10268 871-10009 04

Structural analysis of viscoelastic materials under thermal and pressure loading

NPO-11727 873-10301 09

PRESSURE MEASUREMENTS

PRESSURE GAGES

Economic gas chromatograph system for subambient pressure gas sampling

M-FS-16298 870-10220 02

Precision control system for engine fuel

NPO-12017 870-10244 07

Deadweight calibration of pressure gages without contamination

M-FS-18690 870-10586 07

Miniature grinder for solid specimens

M-FS-20005 871-10059 05

Traveling digital counters for micrometers

LANGLEY-11258 873-10042 06

PRESSURE GRADIENTS

Design and development criteria for metal bellows

M-FS-20640 870-10125 05

Two-directional-flow, axial-motion-joint flow liner

M-FS-16215 870-10166 06

Use of nonwetttable membranes for water transfer

LANGLEY-10743 870-10235 04

Bimorph piezoelectric device functions as flapper valve

ERC-10082 870-10382 01

Hydraulic characteristics of flow through miniature slits

NPO-11354 870-10400 07

Study aids accuracy of turbopump axial thrust analysis

M-FS-18774 871-10020 07

Variable-area nozzle automatically controls fluid flow

LEWIS-11217 871-10222 07

Accelerated battery-life testing - A concept

GSFC-11085 871-10348 06

Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients

LEWIS-11097 872-10111 09

Self-aligning, low-pressure sealing poppet valve

MSC-17745 872-10538 07

Water impact loads

M-FS-21955 872-10621 09

PRESSURE HEADS

Analysis and design of a flat central finned-tube radiator

LEWIS-10893 871-10399 09

PRESSURE MEASUREMENTS

Estimating sensitivity of vacuum gages

LEWIS-11007 870-10099 03

Sinusoidal-pressure generator for testing dynamic pressure probes

LEWIS-11094 870-10352 06

Thin film devices used as oxygen partial pressure sensors

XLA-06473 870-10419 04

Determination of gas volume trapped in a closed fluid system

MSC-15685 871-10094 06

Technique for the integral casting of pressure instrumentation in wind-tunnel models

LANGLEY-10812 871-10247 08

Wind tunnel investigations at transonic Mach numbers

M-FS-20895 871-10254 06

Dynamics of short pressure probes

LEWIS-11293 871-10374 09

Method of determining thermal conductivity in multi-layer insulation systems

M-FS-20213 872-10154 03

PRESSURE OSCILLATIONS

- Wide-range dynamic pressure sensor
ARC-10263 872-10196 03
Laboratory leak tester provides high sensitivity
AEC-10042 872-10240 03
A stagnation pressure probe for use in supersonic flow
LANGLEY-11139 872-10543 06
Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
LEWIS-11270 872-10546 06
A multielement probe for coincident temperature and pressure measurements
LEWIS-11775 872-10716 06
Total-pressure measurement in pulsating flows
LEWIS-12077 873-10252 03
Sound separation probe
LEWIS-12507 875-10286 03

PRESSURE OSCILLATIONS

- High amplitude sinusoidal pressure generator
LEWIS-11241 870-10635 07
Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 871-10020 07
Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 871-10430 06

PRESSURE PULSES

- Investigation of positive shaft seals
M-FS-18589 870-10176 07
Inertia diaphragm pressure transducer
XAC-2981 871-10200 05

PRESSURE RECORDERS

- Sound separation probe
LEWIS-12507 875-10286 03

PRESSURE REDUCTION

- Adjustable flow restrictor
MSC-13433 870-10037 07
New method speeds body inert gas saturation and utilizes surface decomposition
MSC-13543 871-10330 05
Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 871-10335 03
Airflow distribution control for improved turbine engine performance
LEWIS-11593 872-10178 07
Leak test system
M-FS-21788 872-10576 06
Experimental study of flow distribution with circumferential manifolds
LEWIS-11649 872-10738 06

PRESSURE REGULATORS

- Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 870-10101 07
Inexpensive tamper proof safety relief valve
KSC-10470 870-10320 07
Safe suspension of specimens or clusters during dynamic testing - A concept
M-FS-15110 870-10559 07
Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 870-10680 03
System accurately controls pressure in cryogenic tanks
LEWIS-11329 871-10118 03
Propellant-powered actuator for gas generators
ARC-10484 872-10008 03
Pressure sensitive gas flow meter
ARC-10219 872-10049 06

- Fluidic pressure regulators
ARC-10474 872-10162 06
Miniature high pressure regulator
ARC-10428 872-10211 07
Counter lung
ARC-10248 872-10219 05
A closed loop cryogenic environment pressure regulating system
MSC-13880 872-10390 02
Combination pressure regulator and safety valve: A Concept
MSC-14088 872-10446 06
Low frequency sinusoidal pressure generator
LEWIS-11465 872-10477 01
Mass flow controller for gaseous propellants
JSC-14221 873-10207 06
Thermally actuated valve
NPO-11846 873-10347 06
Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 874-10010 07
Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 874-10075 05
Design criteria monograph for valve components
LEWIS-12327 874-10087 06
Therapeutic hand-exercising device with cycling pressure value
LANGLEY-11579 874-10140 05
Remotely operated gas-pressure regulator and shuttle valve
NPO-13201 874-10298 07

PRESSURE SENSORS

- Liquid level sensor
M-FS-16648 870-10219 01
Economic gas chromatograph system for subambient pressure gas sampling
M-FS-16298 870-10220 02
Heat-resistant pressure probe with high-frequency response
NPO-11292 870-10252 06
Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 870-10352 06
Thin film devices used as oxygen partial pressure sensors
XLA-06473 870-10419 04
Post-operative cranial pressure monitoring system
ERC-10336 870-10436 05
Control system for an artificial heart
LEWIS-11057 870-10469 05
Economic method for measuring ultra-low flow rates of fluids
NPO-12064 870-10531 04
Pilot-boost control valve
M-FS-20635 870-10558 07
Novel wave generator adaptable to indoor surfing
LEWIS-11096 870-10563 03
Solid state remote circuit selector switch
LEWIS-10387 870-10579 01
Gage for measuring coastal erosion and sedimentation
LANGLEY-10779 870-10629 01
High amplitude sinusoidal pressure generator
LEWIS-11241 870-10635 07
Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 870-10692 07

SUBJECT INDEX

- Development of a silver-zinc battery system
NPO-11444 870-10718 02
Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 871-10044 06
Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 871-10247 08
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 871-10269 03
Pressure transducer with four-decade dynamic range
KSC-10384 871-10323 01
A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 871-10329 05
Dynamics of short pressure probes
LEWIS-11293 871-10374 09
Low cost, logarithmic mass flow computer
LEWIS-11001 871-10407 06
Metabolic breath analyzer
M-FS-21415 871-10466 05
Multichamber controllable heat pipe
ARC-10199 871-10526 03
Miniature carbon dioxide sensor
MSC-13332 871-10536 03
Oxygen pressure control for electrolysis cells
ARC-10250 872-10074 02
Fluidic ignition detection
M-FS-21498 872-10158 06
Wide-range dynamic pressure sensor
ARC-10263 872-10196 03
Pressure-probe assembly for wind tunnels
ARC-10569 872-10248 03
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 872-10276 03
Nonsteady flow-direction measurement
LEWIS-11499 872-10403 06
Low frequency sinusoidal pressure generator
LEWIS-11465 872-10477 01
Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
LEWIS-11270 872-10546 06
Leak test system
M-FS-21788 872-10576 06
Diode-quad bridge for reactive transducers and FM discriminators
ARC-10364 872-10691 01
Automated analysis of blood pressure measurements (Korotkov sound)
MSC-13999 872-10756 05
Signal conditioner for potentiometer type transducers
LEWIS-11822 873-10015 01
An economical arterial-pulse-wave transducer
GSFC-11531 873-10046 05
Limited tactile stimulus for prosthetic hands
M-FS-16570 873-10078 05
Artificial atmosphere control system
M-FS-22159 873-10089 05
Leak detector-measurer
M-FS-21761 873-10203 07

- Measuring micro-organism gas production
 LANGLEY-11326 B73-10241 05
 Sequential-strip and sequential-disk filters
 JSC-14592 B73-10430 06
 Electronic high pass filter
 LEWIS-11600 B74-10083 02
 Trielectrode capacitive pressure transducer
 ARC-10711 B75-10025 01
 Mounting technique for pressure transducers minimizes measurement interferences
 ARC-10933 B75-10145 08
- PRESSURE SUITS**
 Pressurized suits can be fabricated with adjustable dimensions
 MSC-12398 B71-10092 05
 Communications system for zero-g simulation tests in water
 M-FS-21357 B71-10344 02
- PRESSURE SWITCHES**
 Heat-transfer thermal switch
 LANGLEY-11232 B74-10092 06
- PRESSURE VESSEL DESIGN**
 Computer program for predicting creep behavior of bodies of revolution
 NUC-11104 B71-10037 09
 Method for calculating the stresses in pressure vessels
 MSC-13515 B71-10514 06
 Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
 NPO-11943 B72-10073 09
 Design Guide for glass fiber reinforced metal pressure vessel
 LEWIS-12042 B73-10311 08
- PRESSURE VESSELS**
 Polymerization of perfluorobutadiene
 NPO-10863 B70-10131 04
 New structural approach for determining load carrying capability of filament wound composite materials
 M-FS-15121 B70-10408 06
 Hydrogen maser - Measurement of wall shift with a flexible bulb
 HQ-10552 B70-10441 03
 Stainless steel 301 and Inconel 718 hydrogen embrittlement
 MSC-13557 B70-10621 04
 System accurately controls pressure in cryogenic tanks
 LEWIS-11329 B71-10118 03
 Recommended safety guides for industrial laboratories and shops
 SAN-10050 B71-10175 07
 Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
 LEWIS-11261 B71-10261 04
 Differential expansion fitting for cryogenic liquid tanks
 LEWIS-11260 B71-10268 08
 Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06
 Compressed gas handbook
 KSC-10662 B71-10272 03
 Hermetically sealed motion transmitter
 MSC-17348 B71-10328 07
 Modular construction provides large volume storage facility in minimum space
 M-FS-13568 B71-10354 08
- Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
 MSC-13995 B71-10413 09
 High temperature autoclave vacuum seals
 M-FS-21131 B71-10433 08
 Simple method for forming thin-wall pressure vessels
 ARC-10511 B72-10025 08
 Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
 NPO-11943 B72-10073 09
 High torque bellows seal rotary drive
 LEWIS-11813 B72-10681 07
 Large boron-epoxy filament-wound pressure vessels
 NPO-11900 B73-10038 08
 A flexible all-temperature pressure vessel
 M-FS-19196 B73-10158 03
 Leak detector-measurer
 M-FS-21761 B73-10203 07
 Embossed metal diaphragm has two-way stretch
 NPO-11635 B73-10298 08
 Self-powered mixer for pressurized containers
 LEWIS-12054 B73-10312 03
 Probability of stress-corrosion fracture under random loading
 NPO-13113 B73-10453 04
 High strength, wire-reinforced electroformed structures
 LEWIS-12087 B74-10018 08
 Light-weight spherical submergence vessel
 ARC-10838 B74-10114 08
 A band clamp with a spring toggle lever
 MSC-14736 B74-10240 07
 Variable-volume atomic storage vessel for hydrogen masers
 GSFC-11895 B75-10248 03
- PRESSURE WELDING**
 Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
 LEWIS-11490 B74-10124 04
- PRESSURIZED CABINS**
 Prediction of gas leakage of environmental control systems
 HQ-10270 B70-10201 05
 Leak test system
 M-FS-21788 B72-10576 06
 Leak detector-measurer
 M-FS-21761 B73-10203 07
- PRESSURIZING**
 Concept for a gas operated actuator
 NPO-11340 B70-10516 07
 Deadweight calibration of pressure gages without contamination
 M-FS-18690 B70-10586 07
 Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
 LEWIS-11208 B70-10628 03
 Low temperature uses of helium
 LEWIS-11171 B70-10673 03
 Submerged gas injector expels cryogenic liquids from tanks
 LEWIS-11231 B71-10219 07
 Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06
- Structural behavior of tapered inflated fabric cylinders under various loading conditions
 MSC-15317 B71-10327 06
 Modular construction provides large volume storage facility in minimum space
 M-FS-13568 B71-10354 08
 Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
 MSC-13995 B71-10413 09
 Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 B72-10177 02
 Expandable coating cocoon leak detection system
 M-FS-21848 B72-10380 06
- PRESTRESSING**
 Biaxial prestressing of brittle materials
 M-FS-20272 B70-10316 04
 Perload indicating turnbuckle
 M-FS-21488 B72-10355 07
- PREVENTION**
 Automated preventive maintenance program
 GSFC-11408 B71-10500 09
 Radiological control manual
 M-FS-22092 B72-10460 03
 Polymers used to absorb fats and oils: A concept
 NPO-11609 B74-10210 05
 The impact of water on free-falling bodies
 M-FS-23310 B75-10311 03
- PRIMERS (COATINGS)**
 New primers for adhesive bonding of aluminum alloys
 M-FS-21387 B71-10488 04
- PRINTED CIRCUITS**
 Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01
 Data acquisition from high-speed rotating shafts
 LEWIS-10886 B70-10043 01
 Integrated circuit flat-pack lead bender
 MSC-13489 B70-10117 01
 Holographic stress analysis
 M-FS-20687 B70-10123 01
 A new low-expansion nonflammable printed circuit board
 M-FS-20408 B70-10154 01
 Applications of gap welding
 M-FS-20715 B70-10155 08
 A vapor barrier for cold testing printed circuit cards
 M-FS-15115 B70-10172 01
 Fuse-holder concept expedites electronic component changes
 M-FS-20615 B70-10191 01
 Prevention of cracking of soldered joints in electronic assemblies
 M-FS-20544 B70-10241 08
 Controlled etching of printed-circuit boards
 XGS-06306 B70-10327 04
 Coplanar interconnection module
 ERC-10237 B70-10378 01
 Economical printed circuit front panel for computer use
 KSC-10573 B70-10560 01
 Ground computer test trap
 KSC-10574 B70-10561 09
 PUZZLE - A program for computer-aided design of printed circuit artwork
 LRL-10050 B71-10122 09

PRINTERS

SUBJECT INDEX

Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 871-10226 02
Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 871-10253 08
Improved electrical spot terminals
NPO-10034 872-10492 01
Magnetic circuitry mutual coupling probe
M-FS-21664 872-10535 02
A new packaging and testing concept for microelectronic components
M-FS-20936 873-10109 01
Welded printed circuit (pc) stick
GSFC-11773 873-10393 01
New standoffs provide high-reliability component mounting for printed wiring boards
LANGLEY-11176 873-10512 01
High-voltage distributors
GSFC-11849 874-10242 01
Alignment fixture for precision cutting of printed-wiring boards
LANGLEY-11658 874-10290 01
Improved printed-wiring boards for high-reliability circuits
M-FS-23147 875-10039 01
Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 875-10195 01
Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 875-10196 01
Start/stop switches for testing detonation velocity of explosives
KSC-10793 875-10255 01

PRINTERS

Device for printing alphanumeric listings and digital data plots
LEWIS-10954 870-10002 02
Fiscal output data produce versatile graphic-numeric charts
NUC-10394 871-10108 09

PRINTERS (DATA PROCESSING)

Wiring harnesses documented by punched-card technique
NPO-11249 870-10091 09
Concept for high speed computer printer
KSC-10373 870-10484 09

PRINTING

Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 871-10127 08
Improved photographic prints with a linear radial transmission filter
LANGLEY-11221 873-10242 03

PRINTOUTS

Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 870-10311 03
Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 870-10514 08
A method of numerically controlled machine part programming
M-FS-15039 870-10599 09
Computerized toroidal transformer design
NPO-11115 870-10606 09
Program for improved electrical harness documentation and fabrication
GSFC-10386 871-10054 09
DSIF station schedules
NPO-11547 871-10243 09

Determination of radiation interchange factors
MSC-13475 871-10295 09
MAPS - a computerized management analysis and planning system
LEWIS-11349 871-10321 09
Programmed physiological infusion system
ARC-10447 872-10126 05

PRIORITIES

Advanced-priority interrupt module
NPO-13067 874-10165 02

PRISMS

Noncontacting-optical-strain device
NPO-10778 870-10292 03
Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 870-10568 05
Less-expensive Rochon prisms
M-FS-20554 870-10681 03
Optical enhancement of photomultiplier sensitivity
ARC-10213 871-10113 03
Variable ratio beam splitter for laser applications
ARC-10391 871-10265 03
Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 871-10378 03
Optical bonding agents for severe environments
ARC-10459 872-10063 04
Solar sensor with autocollimator
ARC-10148 872-10192 03
Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 872-10310 03
An improved apochromatic wedge utilizing optical molecular contact bonding
GSFC-11082 872-10388 03
Precision machining of steel decahedrons
M-FS-21361 872-10597 07
Holographic direct-vision spectroscopy
LANGLEY-11750 875-10090 03
Visual alignment aid
LANGLEY-11842 875-10228 03

PROBABILITY DENSITY FUNCTIONS

Elimination of redundancy in telemetered data
HQ-10585 870-10431 06
Global search algorithm for optimal control
ARC-10359 870-10637 09
Pattern recognition technique
NPO-11337 871-10187 06
Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 871-10273 03
Tolerance analysis program
MSC-17487 871-10389 09
Microbial burden prediction model program
NPO-11709 871-10401 09
Program for standard statistical distributions
M-FS-21466 872-10602 09

PROBABILITY DISTRIBUTION FUNCTIONS

Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 871-10027 04

Table for estimating parameters of Weibull distribution
M-FS-18817 871-10436 03
Anti-multipath digital signal detector
LANGLEY-11379 874-10137 02
Micro-organism distribution sampling for bioassays
LANGLEY-10789 874-10289 05

PROBABILITY THEORY

System availability management technique for reliability and maintainability analysis
KSC-10315 870-10063 09
COPTRAN - A method of optimum communication systems design
ERC-10273 870-10501 09
Reliability Analysis Model
M-FS-14513 870-10614 09
Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 870-10626 06
Generalized safety equation - A concept
M-FS-20522 871-10183 06
Energy levels and transition probability matrix elements of ruby for maser applications
NPO-11687 871-10308 09
Accelerated battery-life testing - A concept
GSFC-11085 871-10348 06
Elements of orbit-determination theory - Textbook
NPO-11466 871-10425 03
Thermal scale modeling
M-FS-21268 871-10432 03
Minimum weight meteoroid shielding determination
MSC-17017 871-10447 09
Graphical method for analyzing digital computer efficiency
ARC-10210 871-10453 09
Analog table look-up device identifies unknown terrain
MSC-13816 872-10033 03
Validity test for linear error analysis
JSC-14378 873-10219 09
Reliability computation from reliability block diagrams
NPO-13304 875-10276 07

PROBES

Electronic flaw simulator for eddy current probe calibration
NUC-10211 870-10533 01
Rugged, low-conductance, heat-flow probe
MSC-13443 870-10622 03
Spray momentum measuring system
MSC-12305 871-10137 05
Contact-resistance test probes: A concept
M-FS-16891 871-10471 01
Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 872-10665 03
A multielement probe for coincident temperature and pressure measurements
LEWIS-11775 872-10716 06
Probes for measuring noise current in an electronic cable
NPO-13123 873-10454 02

PROBLEM SOLVING

Short-duration, transonic flow, variable-porosity test section
M-FS-20509 870-10256 03

SUBJECT INDEX

Overlapped conic simulation of
three-body trajectories
MSC-13460 B70-10536 03
Global search algorithm for optimal
control
ARC-10359 B70-10637 09
A report of advancements in structural
dynamic technology resulting from Saturn
5 programs
LANGLEY-10684 B70-10710 06
Numerical integration of second order
differential equations
M-FS-20536 B71-10186 09
Compressed gas handbook
KSC-10662 B71-10272 03
Approximate properties of the response
of nonlinear dynamic systems to stochastic
inputs
M-FS-20717 B71-10273 03
Cast segment evaluation
M-FS-21354 B71-10363 08
Psychrometric chart for physiological
research
ARC-10394 B71-10470 03
Synthesis of dynamic systems
M-FS-21490 B71-10491 09
Optimization technique for problems with
an inequality constraint
ARC-10522 B72-10222 09
Indefinite integrals of products of some
exponential and trigonometric functions
LEWIS-11493 B72-10225 09
Analysis and computer programs to
calculate acoustic wave properties of
baffled chambers
LEWIS-11529 B72-10577 09
Redundant data management system
M-FS-21831 B72-10589 09
System/360 Computer Assisted
Network Scheduling (CANS) System
GSFC-10909 B72-10599 09
Vortex-lattice FORTRAN program for
estimating subsonic aerodynamic
characteristics of complex planforms
LANGLEY-11047 B72-10618 09
Design criteria monograph for high-load
high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04
Numerical solution of potential flow
problems in terms of flux components
M-FS-21751 B72-10667 09
A linear programming manual
HQ-10743 B72-10671 09
Computer program to determine roots
of polynomials by ratio of successive
derivatives
LEWIS-11809 B73-10244 09
Minimal hardware, binary sequence
pseudonoise generator and detector
NPO-11406 B73-10292 01
PROCEDURES
Standard environmental testing
practices
NPO-11567 B72-10101 02
PROCESSING
Rene 41 heat treatment electron
microscopy
M-FS-18633 B70-10081 04
PROCUREMENT
Digital-coded matrix system simplifies
design and construction of flow charts
MSC-13539 B71-10086 09
PROCUREMENT MANAGEMENT
Computer program for discounted cash
flow/rate of return evaluations
M-FS-19040 B71-10377 09

PRODUCT DEVELOPMENT

Zipper-type electrical connectors
NPO-11639 B72-10159 01
Devolatilization of polymer resins
GSFC-11358 B72-10280 04
Graphite and boron-reinforced composite
materials data summary
M-FS-21691 B72-10294 04
Packaging concept for LSI beam lead
integrated circuits
M-FS-21374 B72-10329 07
Portable electron beam weld chamber
MSC-17738 B72-10338 06
Stem clutch for motor driven valve
LRL-10032 B72-10345 07
Improved universal electrical connector
M-FS-14741 B72-10363 01
Bondability of RTV silicon rubber
AEC-10026 B72-10367 04
Chuck for delicate drills
ARC-10660 B72-10414 07
Aluminum nitride insulating films for
MOSFET devices
NPO-11859 B72-10425 04
High-speed, self-acting shaft seal
(circumferential type)
LEWIS-11274 B72-10447 07
Miniature intermittent contact switch
ARC-10450 B72-10452 01
Ball detent mechanism
M-FS-21735 B72-10470 07
Interferometric measurement of the
velocity of radiating particles
HQ-10371 B72-10495 03
No-err typing aids
M-FS-15218 B72-10498 07
Tandem steerable running gear
M-FS-22012 B72-10499 07
Thermocouple tape
LEWIS-11072 B72-10515 04
Advanced high-temperature
electromagnetic pump
LEWIS-11283 B72-10537 07
Self-aligning, low-pressure sealing
poppet valve
MSC-17745 B72-10538 07
Film holder for curved vacuum platen
MSC-14120 B72-10542 07
Sterile chamber operation with
bio-isolator suit system
LANGLEY-11054 B72-10547 05
Immobilized phosphorylase for synthesis
of polysaccharides from glucose
ARC-10680 B72-10550 04
Helium window for shock-tube
monochromators
NPO-11852 B72-10556 03
Vise to hold bones or other irregular
objects
ARC-10679 B72-10569 07
Self-deploying boom
GSFC-10566 B72-10574 07
An absentee monitoring device
KSC-10668 B72-10578 01
Improved silver-zinc battery-terminal
seals
LEWIS-11615 B72-10581 06
High pressure liquid gas pump
MSC-14087 B72-10590 06
A transmitting and reflecting diffuser for
ultraviolet light
LANGLEY-10385 B72-10611 03
Flexible thermal device
M-FS-21630 B72-10612 04
Polyimide bonded graphite fluoride: A
new long life solid lubricant coating
LEWIS-11864 B72-10628 04

PRODUCTION ENGINEERING

Magnetometer uses bismuth-selenide
LEWIS-11632 B72-10629 03
Tissue holder for experimental and
Demonstration Surgery
LEWIS-11755 B72-10630 05
A process yields large quantities of pure
ribosome subunits
HQ-10662 B72-10653 05
Two-speed deflection system for electron
micropattern generator
M-FS-22117 B72-10668 02
Sprag solenoid brake
M-FS-21846 B72-10669 06
A shut-off valve for flexible tubing
M-FS-21731 B72-10687 07
Concentric-seating poppet
NPO-11658 B72-10704 06
Triangular wheel locomotion
mechanism
NPO-11366 B72-10714 06
Design of microstrip components by
computer
LANGLEY-11210 B72-10741 01
Automated analysis of blood pressure
measurements (Korotkov sound)
MSC-13999 B72-10756 05
Computer program for the design of
toroidal transformers
LEWIS-11878 B73-10214 09
Design Guide for glass fiber reinforced
metal pressure vessel
LEWIS-12042 B73-10311 08
Process for the production of
star-tracking reticles
GSFC-11188 B73-10488 03
PRODUCTION ENGINEERING
Fabricating subscale components for
application to full-scale parts
M-FS-20805 B70-10390 07
Silicon solar cells improved by lithium
doping
NPO-11390 B70-10585 04
A method of numerically controlled
machine part programming
M-FS-15039 B70-10599 09
Digital-coded matrix system simplifies
design and construction of flow charts
MSC-13539 B71-10086 09
Information quality-control model
NPO-11431 B71-10281 06
Low cost anti-galling bushings
LEWIS-11724 B72-10359 08
Nondestructive testing for braze voids
in thin panels by use of special coatings
LANGLEY-10486 B72-10374 08
Fabrication techniques for organic
electrolyte battery
AEC-10019 B72-10428 08
Efficient wire-grid duplexer-polarized for
CO2 lasers
GSFC-11403 B72-10440 03
Built-in bleeder system in laminated
plastic structures
MSC-17713 B72-10562 08
Precision machining of steel
decahedrons
M-FS-21361 B72-10597 07
A four-panel enclosure protects from
explosion
M-FS-21847 B72-10613 06
Design criteria monograph on turbopump
inducers
LEWIS-11824 B72-10635 08
Dual field alignment display and control
for electron micropattern generator
M-FS-22118 B72-10646 01

Two-speed deflection system for electron micropattern generator
M-FS-22117 B72-10668 02

Reconstituted asbestos matrix for fuel cells
MSC-12568 B75-10339 04

PROFILES
Study of second breakdown in power transistors using infrared techniques
M-FS-20748 B71-10021 01

PROFILOMETERS
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01

PROGRAMMED INSTRUCTION
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09

Programmed physiological infusion system
ARC-10447 B72-10126 05

PROGRAMMERS
Multimode ergometer system
M-FS-21044 B71-10107 05

Automatic amino acid analyzer
ARC-10215 B71-10165 04

Automatic transmission line monitor
KSC-10385 B71-10288 02

Programmed multiplexing system simultaneously monitors several voltages
MSC-17139 B71-10517 02

PROGRAMMING (SCHEDULING)
Externally programmed variable timer
M-FS-20776 B71-10437 04

PROGRAMMING LANGUAGES
GPEDIT
GSFC-11308 B72-10620 09

Marshall vehicle-engineering simulation system (MARVES)
M-FS-21701 B75-10199 06

PROJECT MANAGEMENT
PERT "C"
M-FS-20164 B70-10184 09

A report of advancements in structural dynamic technology resulting from Saturn 5 programs
LANGLEY-10684 B70-10710 06

Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09

MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09

Systems management techniques and problems
M-FS-21401 B71-10361 01

Program audit, A management tool
KSC-10557 B71-10380 01

GREMEX update (Goddard research engineering management exercise)
GSFC-11512 B73-10162 09

The Langley Research Center NASA/PERT TIME III
LANGLEY-11887 B75-10302 09

PROJECTILES
Self-sealing propellant-actuated device eliminates atmosphere contamination
NPO-11013 B70-10248 07

Economical technique for fragmentation testing
ARC-10792 B74-10052 04

PROJECTION
Optical alignment of electrodes on electrical discharge machines
XAC-09489 B72-10036 07

PROJECTIVE GEOMETRY
Trimetric scale for drafting machines
MSC-15829 B75-10172 09

PROJECTORS
Reducing streak film data via electronic cross correlator
M-FS-18804 B70-10365 01

Luminescent screen composition and apparatus
ERC-10010 B70-10440 01

Ambient-light-absorbing screen for front projection
ERC-90017 B70-10472 03

Concept for high speed computer printer
KSC-10373 B70-10484 09

Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05

Roll function in a flight simulator
ARC-10557 B72-10417 02

PROLATE SPHEROIDS
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09

PROPAGATION MODES
Directional coupler for optical waveguides
ERC-10094 B70-10381 03

PROPAGATION VELOCITY
Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02

Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06

Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01

PROPANE
The water-cryogen heat exchanger
NUC-11029 B70-10591 03

Metabolic simulation chamber
HQ-10776 B72-10658 05

PROPELLANT ACTUATED DEVICES
Self-sealing propellant-actuated device eliminates atmosphere contamination
NPO-11013 B70-10248 07

PROPELLANT ADDITIVES
Suppressants for lowering propellant binder burning rate
ARC-10563 B72-10560 04

PROPELLANT BINDERS
Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03

Suppressants for lowering propellant binder burning rate
ARC-10563 B72-10560 04

New polymer systems: Chain extension by dianhydrides
NPO-13046 B74-10077 04

PROPELLANT CHEMISTRY
Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 B72-10249 04

Suppressants for lowering propellant binder burning rate
ARC-10563 B72-10560 04

PROPELLANT COMBUSTION
Self-sealing propellant-actuated device eliminates atmosphere contamination
NPO-11013 B70-10248 07

Fluidic ignition detection
M-FS-21498 B72-10158 06

PROPELLANT DECOMPOSITION
Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03

PROPELLANT EVAPORATION
Main tank injection pressurization program
LEWIS-11368 B72-10069 09

PROPELLANT GRAINS
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07

PROPELLANT MASS RATIO
Rising-plate rheometer
ARC-10524 B72-10026 03

PROPELLANT PROPERTIES
Suppressants for lowering propellant binder burning rate
ARC-10563 B72-10560 04

PROPELLANT SPRAYS
Injector has no backsplash
NPO-13208 B73-10461 07

PROPELLANT STORAGE
Fluidic pressure regulators
ARC-10474 B72-10162 06

Turbopump thermodynamic cooling
M-FS-21597 B72-10408 06

PROPELLANT TANKS
Pilot-boost control valve
M-FS-20635 B70-10558 07

Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07

Main tank injection pressurization program
LEWIS-11368 B72-10069 09

Fluidic pressure regulators
ARC-10474 B72-10162 06

Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03

Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03

PTFE films with improved flexibility
NPO-12028 B72-10551 04

Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06

PROPELLANT TRANSFER
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03

PROPELLANTS
Volumetric calibration of a propellant utilization system
M-FS-14943 B70-10156 06

Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07

CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09

Accumulative weights program
M-FS-15066 B71-10181 09

New procedure for determining minimum time orbit transfers
M-FS-14804 B71-10376 09

Cavitating Venturi sump
ARC-10504 B72-10012 06

Zero-leakage valves
ARC-10506 B72-10024 06

New type of trifunctional alcohol
NPO-10714 B72-10553 04

Propellant feed systems transients
MSC-17848 B72-10677 06

PROPELLER SLIPSTREAMS

Lift distribution in a rectangular jet
ARC-10424 B71-10030 09

PROPELLERS

Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06

A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06

Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03

PROPORTIONAL COUNTERS

Reduction of background in an X-ray proportional counter
HQ-10253 B70-10169 02

Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
ARG-10412 B70-10233 04

Fast-neutron spectrometer developments
M-FS-22279 B73-10116 03

PROPORTIONAL LIMIT

Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08

PULSION

Flueric-controller pneumatic stepping motor system
LEWIS-11051 B70-10332 02

PROPULSION SYSTEM CONFIGURATIONS

Fluidic pressure regulators
ARC-10474 B72-10162 06

Propulsion sizing program
MSC-14016 B72-10605 09

Computer programs for calculating potential flow in propulsion system inlets
LEWIS-12152 B75-10018 09

PROPULSION SYSTEM PERFORMANCE

Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03

Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07

Fluidic pressure regulators
ARC-10474 B72-10162 06

Rapid analysis of electric propulsion missions
ARC-10430 B72-10299 09

Propulsion sizing program
MSC-14016 B72-10605 09

Final report on a study of low-density nozzle flows, with application to microthrust rockets
HQ-10761 B72-10748 06

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09

PROPYLENE

Improved protection for silicon solar cells
LEWIS-11065 B70-10706 08

Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03

Cold-blade stripper for polyimide and TFE insulation on FCC
M-FS-20115 B71-10460 08

Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02

Liquid ethylene-propylene copolymers
NPO-13555 B75-10207 04

PROPYLENE OXIDE

Nonflammable organic adhesives effective over wide temperature range
MSC-13586 B70-10644 04

Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04

PROSTHETIC DEVICES

Improved orthopedic arm joint
M-FS-21611 B71-10485 05

Space suit may have orthotic applications
ARC-10275 B72-10297 05

Limited tactile stimulus for prosthetic hands
M-FS-16570 B73-10078 05

A proposed hand-tool assembly for robots
M-FS-22266 B73-10216 07

Artificial limb connection
KSC-10833 B74-10183 05

Mobile automatic metabolic analyzer
M-FS-23143 B75-10077 05

Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 B75-10148 05

Implantable prosthetic pump boosts blood pressure: A concept
NPO-13626 B75-10177 05

PROTECTION

Improved protection for silicon solar cells
LEWIS-11065 B70-10706 08

High voltage lightning grounding device
LEWIS-11282 B71-10136 01

Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04

Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02

Integral aircraft passenger seat
ARC-10799 B73-10495 05

PROTECTIVE CLOTHING

Improved heat-resistant garments
MSC-12109 B70-10544 08

Recommended safety guides for industrial laboratories and shops
SAN-10050 B71-10175 07

Sterile chamber operation with bio-isolator suit system
LANGLEY-11054 B72-10547 05

Lightweight protective clothing for the safe handling of high-intensity pressurized lamps
LEWIS-12073 B75-10007 04

Analytic model for assessing thermal performance of SCUBA divers
ARC-10927 B75-10029 09

PROTECTIVE COATINGS

Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 B70-10194 08

Improved optical lens system
NPO-11311 B70-10354 03

New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04

High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08

Intumescent coatings as fire retardants
ARC-10099 B70-10450 04

Miniature spray-painting booth
MSC-15811 B70-10549 03

Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08

Improved cover for cadmium sulfide solar cells
LEWIS-11003 B70-10584 01

Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04

Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04

Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01

Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04

Environmental effects on silicon solar cells
NPO-11475 B71-10282 02

Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04

Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04

High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04

Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03

Development of conformal coating materials
M-FS-21393 B71-10483 04

Foldable patterns form construction blocks
MSC-13860 B71-10523 08

Sheet plastic filters for solar cells
NPO-11464 B72-10090 04

Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04

Advanced infrared photomultiplier
M-FS-20941 B72-10152 03

A protective coating for stainless steel
LEWIS-11267 B72-10256 04

Polymeric coatings using electronic excitation
HQ-10698 B72-10257 04

Devolatilization of polymer resins
GSFC-11358 B72-10280 04

Synthesis of temperature and solvent-resistant polymers
M-FS-20848 B72-10342 04

Nondestructive testing for braze voids in thin panels by use of special coatings
LANGLEY-10486 B72-10374 08

Expandable coating cocoon leak detection system
M-FS-21848 B72-10380 06

Cathode for use with low density gases
HQ-10687 B72-10530 01

An improved technique for the use of zinc-rich coatings
KSC-10766 B73-10149 04

Applying high-emittance and solar-absorptance coating to aluminum
LANGLEY-10151 B73-10238 04

New concept in brazing metallic honeycomb panels
LANGLEY-10957 B73-10358 08

- Moisture-resistant coatings for optical components
 ARC-10749 B73-10507 04
 Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
 LEWIS-11930 B74-10016 04
 Detection of cracks in surface insulation
 MSC-14187 B74-10095 04
 In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
 MSC-14435 B74-10096 04
 Moisture-resistant baffle material for fuel tanks
 ARC-10861 B74-10219 04
 Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
 LEWIS-12554 B75-10290 04
- PROTECTORS**
 Prevention of damage to delicate connectors during mounting of heavy engines for testing
 NUC-10322 B71-10044 06
 Gate protective device for insulated gate field-effect transistors
 M-FS-21626 B72-10149 01
 Improved intensifying screen reduces X-ray exposure
 AEC-10090 B72-10232 03
 Self-protected electrodes limit field-emission current
 ERC-10015 B74-10253 01
- PROTEIN METABOLISM**
 The deterioration of intermediate moisture foods
 MSC-13827 B71-10332 05
- PROTEINS**
 Improved apparatus for continuous culture of hydrogen-fixing bacteria
 HQ-09000 B70-10001 05
 Metabolic balance analysis program
 M-FS-21237 B71-10384 09
 Development of non-sweet, flavored food cubes
 MSC-14002 B71-10521 05
 Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04
 A process yields large quantities of pure ribosome subunits
 HQ-10662 B72-10653 05
 Zeta potential control for electrophoresis cells
 M-FS-22333 B73-10260 04
- PROTON BEAMS**
 Mass separator for low velocity ions
 ARC-10375 B72-10123 03
- PROTON IRRADIATION**
 Improved magnesia for thermal control coatings
 ARC-10677 B72-10424 04
- PROTONS**
 Improved cover for cadmium sulfide solar cells
 LEWIS-11003 B70-10584 01
 Improved protection for silicon solar cells
 LEWIS-11065 B70-10706 08
 Mass separator for low velocity ions
 ARC-10375 B72-10123 03
 Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
 M-FS-21113 B72-10321 04
- PROTOTYPES**
 Miniature spray-painting booth
 MSC-15811 B70-10549 03
 Technique for experimental determination of radiation interchange factors in solar wavelengths
 MSC-13476 B71-10066 03
 Hydrostatic liquid-bearing for precision gyro
 M-FS-21138 B71-10207 07
 Inorganic glass ceramic slip rings
 M-FS-20711 B72-10313 04
- PROTRACTORS**
 Multihead measuring tape
 LANGLEY-11266 B73-10193 07
 Pocket gauge for checking insert clocking of multipin circular connectors
 NPO-11924 B74-10160 01
- PROTUBERANCES**
 Wind tunnel investigations at transonic Mach numbers
 M-FS-20895 B71-10254 06
- PROVING**
 Teardown analysis for detecting shelf-life degradation
 M-FS-24017 B71-10195 04
 Study of nondestructive techniques for redundancy verification
 KSC-10661 B71-10258 02
 Composite casting demonstration
 M-FS-21668 B72-10266 04
 The design of an automated verification of redundant systems
 KSC-10702 B72-10295 02
- PROVISIONING**
 Development of non-sweet, flavored food cubes
 MSC-14002 B71-10521 05
- PSEUDONOISE**
 Equipment-tolerant range code demodulation method - A concept
 M-FS-13987 B70-10267 01
- PSYCHOLOGICAL TESTS**
 Human performance measuring device
 LANGLEY-10679 B70-10619 05
- PSYCHOMETRICS**
 Psychometric chart for physiological research
 ARC-10394 B71-10470 03
- PSYCHOMOTOR PERFORMANCE**
 New reaction tester accurate within 56 microseconds
 MSC-13604 B72-10031 05
- PSYCHOPHYSIOLOGY**
 Human performance measuring device
 LANGLEY-10679 B70-10619 05
- PUBLIC ADDRESS SYSTEMS**
 Communications system for zero-g simulation tests in water
 M-FS-21357 B71-10344 02
- PULLEYS**
 Multimode ergometer system
 M-FS-21044 B71-10107 05
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Anti-slipping system improves wire saw performance
 MSC-13508 B71-10522 07
 Apparatus for heat treating plastic belts
 NPO-13205 B74-10299 02
- PULMONARY FUNCTIONS**
 Estimating carbon monoxide exposure
 MSC-17211 B71-10319 04
- PULSE AMPLITUDE**
 Wide-range pulse-height discriminator
 GSFC-10837 B70-10053 01
 Signal conditioner circuit for photomultiplier tube
 XLA-10773 B70-10096 01
 Reduction of background in an X-ray proportional counter
 HQ-10253 B70-10169 02
 Ultrastable reference pulser for high-resolution spectrometers
 ARG-10364 B70-10216 01
 Tone-burst technique measures high-intensity sound absorption
 LANGLEY-10667 B71-10395 03
 Speech therapy and voice recognition instrument
 HQ-10628 B72-10652 05
 Peak-holding circuit for extremely narrow pulses
 JSC-14129 B73-10317 02
 Pulse stretcher for narrow pulses
 JSC-14130 B73-10365 02
- PULSE AMPLITUDE MODULATION**
 Third order digital-to-analog converter
 MSC-12458 B72-10030 02
- PULSE CODE MODULATION**
 Digital phase-modulation/multiplex system
 NPO-11338 B70-10355 02
 An improved telemetry system
 ARC-10336 B71-10201 01
 Multifunction audio digitizer for communications systems
 MSC-13855 B71-10318 02
 Self-synchronizing, bi-orthogonal coded PCM telemetry system
 GSFC-11237 B71-10324 02
 Third order digital-to-analog converter
 MSC-12458 B72-10030 02
 An improved learning decoder
 MSC-14070 B72-10573 02
 A technique to eliminate false lock in PCM demodulation
 JSC-12494 B73-10106 02
 Phase shift keyed, pulse code modulated signal synchronizer
 JSC-12462 B73-10107 02
 Two-carrier command modulation system
 NPO-11548 B73-10273 02
 High speed direct-binary to binary-coded-decimal converter and scaler
 KSC-10326 B73-10281 02
 Single-channel digital command-detection system
 NPO-11302 B73-10342 02
 Automatic PCM guard-band selector and calibrator
 KSC-10812 B73-10510 02
 Low-distortion receiver for bilevel, baseband PCM waveforms
 MSC-14557 B74-10025 02
 Dually-mode-locked ND: YAG laser
 GSFC-11746 B74-10038 03
 Antiresonant ring interferometer for laser cavity dumping, mode locking, and other applications
 HQ-10844 B75-10087 03
- PULSE COMMUNICATION**
 Burst synchronization detection system
 MSC-90317 B70-10159 02
 Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
 Traffic control system and method
 GSFC-10087 B74-10024 02

Dynamic polarization compensating system for optical communications receiver

GSFC-11782 B74-10182 03

Fill-in binary loop pulse-torque quantizer

M-FS-23100 B75-10037 02

PULSE DOPPLER RADAR

Analysis of orbital heat transfer

ARC-10842 B74-10115 02

PULSE DURATION

One-shot multivibrator with complementary metal-oxide-semiconductor components

MSC-13492 B70-10305 01

Design of hysteresis circuits using differential amplifiers

ARC-10070 B71-10162 01

Lightning flash detection system

ARC-10562 B72-10272 02

Oscillation of laser-beam intensity as observed with beam splitters

ARC-10694 B72-10572 03

Pulse stretcher for narrow pulses

JSC-14130 B73-10365 02

PULSE DURATION MODULATION

Optimal electric-drive system for vehicles

NPO-11210 B70-10435 02

Pulse width-pulse rate modulator

ARC-10025 B71-10497 01

Brushless DC motor with dual windings

M-FS-21290 B71-10530 02

Oxygen pressure control for electrolysis cells

ARC-10250 B72-10074 02

Pulse-width-modulated device for precision temperature control

NPO-11407 B72-10507 02

Isolated output for class-D dc amplifiers

M-FS-21616 B73-10331 02

Pulse-width-modulated servo valve for autopilot system

LANGLEY-11643 B74-10179 06

PULSE FREQUENCY MODULATION

Design of hysteresis circuits using differential amplifiers

ARC-10070 B71-10162 01

Nondestructive testing of bond integrity in foam insulation/aluminum composites

M-FS-20786 B71-10507 06

Implanted telemeter for electrocardiogram and body temperature

XAC-08505 B72-10035 05

Lightweight, broad-band spectrum analyzer

ARC-10405 B72-10060 01

PULSE FREQUENCY MODULATION TELEMETRY

Highly stable analog-to-digital converter

NPO-13385 B75-10277 01

PULSE GENERATORS

Compact apparatus for photogeneration of hydrated electrons

ARG-10487 B70-10036 03

Precise audio-frequency markers for nuclear magnetic resonance spectra

NPO-11147 B70-10086 02

Highly stable biased amplifier and stretcher system

ARG-10354 B70-10142 01

Testing device for verifying the performance of digital recorders

KSC-10300 B70-10149 01

Ultrastable reference pulser for high-resolution spectrometers

ARG-10364 B70-10216 01

Electro-optical time marker for high-speed cameras

KSC-10294 B70-10229 01

Pulse-rate averaging circuit

GSFC-10718 B70-10370 01

Low-power integrated-circuit driver for ferrite-memory word lines

ERC-10212 B70-10374 09

Technique for analyzing human respiratory process

MSC-13436 B70-10528 05

Digital input is buffered to real-time analog display

KSC-10397 B70-10562 01

Electronic strain-level counter

LANGLEY-10756 B70-10716 02

Electrical instrument measures position and velocity of shock waves

ARC-10356 B71-10143 03

A continued fraction generator for smooth pulse sequences

MSC-13697 B71-10304 01

Externally programmed variable timer

M-FS-20776 B71-10437 04

Pulse excitation of bolometer bridges

ARC-10292 B72-10054 01

Spark ultrasonic transducer

M-FS-21233 B72-10594 04

Programmable random interval generator

JSC-14131 B73-10367 02

A high-speed spectrograph shutter

HQ-10635 B73-10368 01

Alphanumeric character generator for oscilloscope

GSFC-11582 B73-10370 02

PULSE HEATING

Low-temperature bonding of temperature-resistant electronic connections

M-FS-20909 B71-10253 08

Pulsed high-power arc heater with improved cathode and triggering mechanism

ARC-10173 B72-10048 03

PULSE MODULATION

Directional coupler for optical waveguides

ERC-10094 B70-10381 03

Circuit suppresses spurious sidebands

MSC-13425 B70-10541 01

Waveshaping electronic circuit

M-FS-14916 B71-10429 01

Programmed physiological infusion system

ARC-10447 B72-10126 05

PULSE RADAR

High-accuracy detector for laser radar

MSC-13275 B70-10570 01

PULSE RATE

Pulse rates recorded by digital film positioner

HQ-10358 B70-10141 01

A transformer of closely spaced pulsed waveforms

LEWIS-11045 B70-10351 01

Pulse-rate averaging circuit

GSFC-10718 B70-10370 01

Control system for an artificial heart

LEWIS-11057 B70-10469 05

Technique for analyzing human respiratory process

MSC-13436 B70-10528 05

A continued fraction generator for smooth pulse sequences

MSC-13697 B71-10304 01

Ear oximeter-transducer monitors four physiological responses

XAC-05422 B72-10224 05

Improved temperature control of liquid cooling garments

MSC-13917 B72-10281 05

Ultrasonic bone densitometer

M-FS-20994 B72-10450 05

PULSE WIDTH AMPLITUDE CONVERTERS

Laser-to-electricity energy converter for short wavelengths

NPO-13390 B75-10119 03

PULSED LASERS

Holographic photography of high velocity particles

ERC-10318 B70-10371 03

Multifrequency laser beams for holographic contouring

ARC-10341 B71-10534 03

Vibration measurement by pulse differential holographic interferometry

LANGLEY-11092 B73-10075 03

Laser system detects air turbulence

M-FS-21244 B73-10210 03

Compact laser through improved heat conductance

NPO-13147 B75-10176 03

PULSED RADIATION

Computer modeling of arc drivers

ARC-10955 B75-10130 09

PULSES

Constant-voltage drive current-steering switch

NPO-10743 B70-10046 01

High-frequency wattage-to-voltage converter

LEWIS-10822 B70-10049 01

Thermoelectric radiometer

ARC-10138 B70-10056 02

Laser altimeter

M-FS-13691 B70-10196 02

One-shot multivibrator with complementary metal-oxide-semiconductor components

MSC-13492 B70-10305 01

High-speed digital plotter

ARG-90001 B71-10049 02

Laser interferometry method for absolute measurement of the acceleration of gravity

M-FS-21225 B71-10232 03

Improved relay chatter detector

NPO-10355 B71-10292 01

Novel shift register eliminates logic gates and power switching circuits

GSFC-10517 B71-10322 01

Phase locking of field sequential color wheel for small TV camera

MSC-13857 B71-10326 02

Television multiplexing system

KSC-10654 B71-10391 02

RF-controlled implantable solid state switch

ARC-10136 B71-10426 01

Waveshaping electronic circuit

M-FS-14916 B71-10429 01

Digital parallel-to-series pulse-train converter

MSC-12417 B71-10450 01

Brushless DC motor with dual windings

M-FS-21290 B71-10530 02

Remote sensing X-ray spectrometer

MSC-13978 B72-10016 03

- High noise immunity one shot
ARC-10137 B72-10047 01
Pulse excitation of bolometer bridges
ARC-10292 B72-10054 01
Time-lapse camera for microscopy
ARC-10423 B72-10125 05
Heart simulator
M-FS-21609 B72-10131 02
Techniques for decoding speech
phonemes and sounds: A concept
GSFC-11898 B75-10086 02
- PUMICE**
Spectral emission measurement of
igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
Hot-blade stripper for polyester insulation
on FCC
M-FS-20117 B71-10461 08
- PUMP IMPELLERS**
A concept for improving efficiency of
multistage centrifugal pumps
LEWIS-10966 B70-10287 07
An investigation of tandem-row,
high-head pump inducers
M-FS-21139 B71-10152 07
A method for calculating the effects of
design errors and measurement errors on
pump performance
LEWIS-11503 B72-10292 07
Data summary and computer program
for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09
- PUMPING**
Optical contamination during thermal
testing in vacuum
M-FS-20736 B70-10659 03
Pressure drop and pumping power for
fluid flow through round tubes
M-FS-24172 B73-10186 09
- PUMPS**
Compact, electromagnetic
multiple-stream multiple-stream pump for
liquid metals - Design concept
NPO-10755 B70-10090 07
Metal cooldown, flow instability, and heat
transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04
A long-lived precision switch actuator for
controlling pump-piston action
NPO-10757 B70-10279 07
Volumetric leak detector
MSC-11325 B70-10302 07
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
Large-capacity pump vaporizer for liquid
hydrogen and nitrogen
M-FS-20508 B70-10368 07
Small hydraulic turbine drives
LEWIS-11064 B70-10416 07
Sorption vacuum trap
ERC-90051 B70-10449 06
Control system for an artificial heart
LEWIS-11057 B70-10469 05
Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
High-temperature pump-motor
assembly
LEWIS-10256 B71-10100 07
Predicting service life margins
M-FS-24015 B71-10194 06
Hydrostatic liquid-bearing for precision
gyro
M-FS-21138 B71-10207 07
Digital computer program for analyzing
chugging instabilities
LEWIS-11294 B71-10215 09
- Variable-area nozzle automatically
controls fluid flow
LEWIS-11217 B71-10222 07
Hydraulic actuator motion limiter ensures
operator safety
ARC-10131 B71-10233 07
Improved method for calculating pump
thermodynamic suppression head
M-FS-20852 B71-10239 07
Tilt table for ergometers and other
biomedical devices
M-FS-21010 B71-10241 05
Programmed physiological infusion
system
ARC-10447 B72-10126 05
Preventing oil migration in vacuum
systems
GSFC-11253 B72-10129 04
High pressure liquid gas pump
MSC-14087 B72-10590 06
Implantable drug therapy device: A
concept
NPO-11934 B72-10708 05
Optimization of fluid line sizes with
pumping power penalty IBM-360 computer
program
MSC-17930 B72-10722 06
Thermal-powered reciprocating pump
NPO-11417 B72-10723 06
Low-cost, portable fire hose tester
LEWIS-12365 B75-10003 06
- PUNCHED CARDS**
Cost-reducing multipurpose microfilm
card
KSC-10508 B70-10071 03
Wiring harnesses documented by
punched-card technique
NPO-11249 B70-10091 09
Digital simulation program improved
M-FS-01504 B70-10705 09
Time Data Sequential Processor
/TDSP/
NPO-11327 B70-10720 09
AUTOTEM - Automated geometry
meshing and heat conduction calculation
NUC-10241 B71-10039 09
Fiscal output data produce versatile
graphic-numeric charts
NUC-10394 B71-10108 09
Man-machine communication - A
transparent switchboard for computers
MSC-13746 B71-10263 02
Frame modal analysis
MSC-17562 B71-10414 09
FORTRAN 4 digital program chah-er
MSC-17567 B71-10448 09
Source deck compression and update
program (CAPS)
GSFC-11545 B72-10619 09
FORTRAN read package
MSC-14161 B72-10750 09
- PUNCHED TAPES**
A method of numerically controlled
machine part programming
M-FS-15039 B70-10599 09
Programmed physiological infusion
system
ARC-10447 B72-10126 05
A system for automatic analysis of blood
pressure data for digital computer entry
LEWIS-11751 B72-10632 05
- PUNCHES**
Precision die-punch for trimming the
conductors of flat conductor cable
M-FS-20142 B71-10419 08
- PUPIL SIZE**
Projections of scan patterns on human
retina
ARC-10181 B72-10193 05
- PUPILS**
Visual focus stimulator aids in study of
the eye's focusing action
ARC-10049 B70-10568 05
- PURGING**
Low temperature uses of helium
LEWIS-11171 B70-10673 03
Self-sealing, easily purged
quick-disconnect hose coupling
MSC-17009 B70-10699 07
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
An economical vent cover
M-FS-20692 B72-10348 07
Helium leak measurements using CO2
as a carrier
M-FS-21742 B72-10354 03
- PURIFICATION**
Comparison of catalyst activity
ARC-10493 B72-10201 04
Electron beam chemistry produces high
purity metals
LEWIS-11639 B72-10439 04
Covalent bonding of polycations to small
polymeric particles
NPO-13487 B75-10327 04
- PURITY**
Determination of hydroxyl content in
impure magnesium oxide
NPO-10774 B70-10017 04
Growth of phase-pure, crack-free single
crystals and large-grained polycrystals of
molybdenum disilicide
HQ-10450 B70-10206 04
Unique intermetallic compounds
prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Modifications to a vacuum assisted
filtering device to minimize contamination
MSC-13733 B71-10277 04
Viscoelastic cushion for patient support
MSC-12447 B71-10316 05
Proposed semiconductor film
improvement
HQ-10685 B72-10438 04
Improved method for reclaiming vacuum
diffusion pump oil
LEWIS-11647 B72-10511 04
- PYRANOMETERS**
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03
- PYRIDINES**
Improved process for synthesizing
anilinosilane compounds
M-FS-14948 B70-10105 04
- PYROHELIOMETERS**
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03
- PYROLYSIS**
Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
Polyimide polymers provide improved
ablative materials
LEWIS-10861 B70-10300 04
Polyimide polymers provide higher char
yield for graphitic structures
LEWIS-10860 B70-10330 04
Statistical characterization of
phenolic-novolak structures
ARC-10393 B71-10255 04
Granular two-phase insulation systems
NPO-12068 B71-10290 04

Chemical modification of
poly(p-phenylene) for use in ablative
compositions
ARC-10135 B72-10451 04

Glass fiber addition strengthens
low-density ablative compositions
LANGLEY-11288 B74-10027 04

Processing for obtaining good quality
water from sewage
NPO-13224 B75-10113 04

PYROLYTIC GRAPHITE

Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04

Improved brazing technique for pyrolytic
graphite
NPO-12026 B71-10293 08

Specimen for high-temperature tensile
tests
ARC-10531 B72-10028 04

Isotropic pyrolytic carbons
ARC-10532 B72-10029 04

PYROLYTIC MATERIALS

High-strength large-diameter
carbon-base fibers
LEWIS-11167 B71-10403 04

PYROMETALLURGY

Unique intermetallic compounds
prepared by shock wave synthesis
M-FS-20861 B71-10216 04

PYROMETERS

Miniature grinder for solid specimens
M-FS-20005 B71-10059 05

Wide-range logarithmic radiometer for
measuring high temperatures
ARC-10254 B71-10498 01

Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01

PYROTECHNICS

Progress in research on chlorate candle
technology
MSC-13409 B70-10258 04

Lightweight S-band helix antenna
KSC-10392 B70-10538 02

Separation of two bodies in space
NPO-10663 B70-10625 09

Battery activation system
ARC-10832 B74-10056 03

PYROXENES

Spectral emission measurement of
igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04

PYRRONES (TRADEMARK)

Water purification by reverse osmosis
using heterocyclic polymer membranes
LANGLEY-10514 B72-10230 04

Thermally-stable, syntactic pyrrone
foams
LANGLEY-11325 B74-10135 06

Q**Q FACTORS**

Multiloop distributed RC active
networks
ARC-10200 B71-10177 01

High q band-pass resonators utilizing
composite band-stop resonator pairs
GSFC-10990 B74-10035 02

Q SWITCHED LASERS

Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02

A bi-stable optical device
HQ-10701 B72-10655 03

Q-switched, cavity-dumped,
mode-locked laser
GSFC-11509 B73-10175 03

Fast recharge circuit for q-switched
lasers
GSFC-11510 B73-10257 02

Wavelength-selective,
Q-switching laser cavity
LANGLEY-11045 B74-10134 03

Laser-actuated mechanical device
NPO-13105 B74-10166 03

Laser system to detonate explosive
devices
NPO-11743 B74-10194 03

Compact laser through improved heat
conductance
NPO-13147 B75-10176 03

QUADRATIC EQUATIONS

New model performance index for
engineering design of control systems
HQ-10520 B70-10293 06

Algorithm for Liapunov stability
analysis
ARC-10498 B72-10023 09

QUADRATURES

Antenna-array, phase quadrature tracking
system
MSC-12205 B70-10095 02

Performance evaluation system for
inertial navigation equipment
MSC-13542 B71-10087 02

Subroutines for evaluating single and
multiple integrals using modified Romberg
method
NPO-11718 B71-10138 09

Variable order integrators for the
numerical solution of ordinary differential
equations
NPO-11643 B71-10248 09

Control of acceleration in sine/random
vibration tests
NPO-11482 B72-10091 02

QUADRUPOLES

Quadrupole ionization gage measures
ultrahigh vacuum
LANGLEY-10397 B70-10620 03

Computer-controlled mass spectrometer
for on-line gas analysis
NPO-11427 B71-10191 03

Ion masking improves resolution in
quadrupole mass spectrometers
GSFC-11406 B73-10181 03

QUALIFICATIONS

Qualifications and certification of
nondestructive testing personnel
M-FS-20850 B71-10271 06

QUALITATIVE ANALYSIS

Colorimetric detection of ethylene glycol
vapor
MSC-13222 B70-10031 03

Nondestructive spot tests allow rapid
identification of metals
LANGLEY-10539 B70-10520 04

Optical probing of supersonic
aerodynamic turbulence
M-FS-20686 B70-10665 03

Methyl alcohol used as penetrant
inspection medium for porous materials
NUC-10419 B71-10103 06

Sunspot analysis and prediction
M-FS-21724 B72-10317 03

Aerotherm chemical equilibrium (ACE)
computer program
LEWIS-11722 B72-10739 09

TLC determination of functionality in
prepolymers
NPO-11731 B73-10037 04

QUALITY

Locating tube blockage that X-ray cannot
detect
NUC-10386 B71-10129 06

Predicting service life margins
M-FS-24015 B71-10194 06

Development of non-sweet, flavored food
cubes
MSC-14002 B71-10521 05

QUALITY CONTROL

Prediction of faults in components of
machinery in motion
GSFC-10801 B70-10116 06

Inexpensive automatic ranging for digital
voltmeters and frequency counters
NUC-10240 B70-10530 01

Miniature spray-painting booth
MSC-15811 B70-10549 03

Digital-coded matrix system simplifies
design and construction of flow charts
MSC-13539 B71-10086 09

Induction brazing manual
M-FS-14924 B71-10123 08

Instruction manuals for radiographic
nondestructive testing
M-FS-21350 B71-10156 06

Predicting service life margins
M-FS-24015 B71-10194 06

Limited life item management
M-FS-24020 B71-10196 06

Automatic cross-sectioning and
monitoring system locates defects in
electronic devices
GSFC-11221 B71-10221 01

Information quality-control model
NPO-11431 B71-10281 06

Calibration-interval adjustment indicator
- A concept
M-FS-18693 B71-10309 01

Rapid method for sampling metals for
materials identification
MSC-17332 B71-10320 04

Flat conductor cable handbook
M-FS-21009 B71-10379 01

Radiographic inspection specifications for
electronic components
M-FS-20723 B71-10438 01

Analog table look-up device identifies
unknown terrain
MSC-13816 B72-10033 03

Standard environmental testing
practices
NPO-11567 B72-10101 02

Devolatilization of polymer resins
GSFC-11358 B72-10280 04

Noncontact torque measurement using
stroboscopic techniques
MSC-12282 B72-10332 07

Mathematical techniques for estimating
operational readiness of complex systems
MSC-17694 B72-10335 09

Evaluating foam heterogeneity
AEC-10046 B72-10365 04

Expandable coating cocoon leak
detection system
M-FS-21848 B72-10380 06

Leak decay method of helium
bombardment leak testing
M-FS-24109 B72-10381 06

Manufacturing contamination prevention
handbook
M-FS-19113 B72-10394 08

Acoustic emission used as weld quality
monitor
AEC-10018 B72-10427 08

- A system for early warning of bearing failure
M-FS-21877 B72-10494 06
- Magnetic circuitry mutual coupling probe
M-FS-21664 B72-10535 02
- Micro-scale crease-and-fold apparatus
NPO-12029 B72-10552 06
- Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04
- Redundancy approaches in bubble domain memories
M-FS-21915 B72-10643 01
- A monostrain test apparatus
M-FS-24221 B72-10679 06
- An optical quality meter suitable for cryogenic liquids
LEWIS-11814 B72-10686 06
- New detection method for rolling element and bearing defects
M-FS-21911 B72-10689 06
- Manufacture and quality control of interconnecting wire harnesses
M-FS-22511 B73-10211 01
- Bonded panel, flaw detection standards
LANGLEY-11399 B73-10240 06
- Pocket gauge for checking insert clocking of multipin circular connectors
NPO-11924 B74-10160 01
- Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06
- Digital tape drive monitor
GSFC-11925 B75-10153 02
- Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
- Bubble-domain circuit wafer evaluation coil set
LANGLEY-11728 B75-10197 01
- Microcircuit testing and fabrication, using scanning electron microscopes
M-FS-23159 B75-10304 01
- Quality control of microelectronic wire bonds
M-FS-23327 B75-10312 01
- Control of nonenzymatic browning in intermediate-moisture foods
MSC-14835 B75-10317 05
- Fast semiautomatic dimensional test set and data logger
MSC-19554 B75-10322 07
- QUANTITATIVE ANALYSIS**
- Quantitative conversion of water to carbon dioxide
NPO-10731 B70-10013 04
- Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04
- Colorimetric detection of ethylene glycol vapor
MSC-13222 B70-10031 03
- Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
- Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 B70-10177 04
- Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
- Determination of nitrogen in titanium nitride
LEWIS-11046 B70-10588 04
- Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
- Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
- Psychrometric chart for physiological research
ARC-10394 B71-10470 03
- Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
- Hexapole magnet field analysis
GSFC-10995 B72-10113 03
- Mercury in the environment
AEC-10048 B72-10233 05
- Sunspot analysis and prediction
M-FS-21724 B72-10317 03
- Composite mobile system for holographic nondestructive testing
M-FS-21704 B72-10351 03
- Aerotherm chemical equilibrium (ACE) computer program
LEWIS-11722 B72-10739 09
- QUANTUM ELECTRODYNAMICS**
- Superconducting quantum-interference devices
M-FS-23163 B75-10097 03
- QUANTUM THEORY**
- Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 B71-10357 03
- QUARTZ**
- Improved heat shield/radiator
NPO-11105 B70-10318 03
- Quasi-optical equivalent of waveguide slide screw tuner
ERC-10312 B70-10384 01
- Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
- Less-expensive Rochon prisms
M-FS-20554 B70-10681 03
- Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
- Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08
- Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
- Superconductor transition temperatures study
M-FS-21247 B71-10385 03
- Multifrequency laser beams for holographic contouring
ARC-10341 B71-10534 03
- Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
- Solar experiment alignment system
ARC-10471 B72-10020 03
- Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
- Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03
- Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03
- Particle detection by a light-scattering technique
ARC-10384 B72-10160 03
- Solar sensor with autocollimator
ARC-10148 B72-10192 03
- Scanning technique for tracking small eye-movements
ARC-10488 B72-10220 05
- Interferometric rotation sensor
ARC-10278 B72-10274 03
- An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03
- Optimal read/write memory system components
M-FS-22044 B72-10697 01
- Thin-film ultraviolet detector and spectrometer
NPO-11432 B72-10701 03
- Process for the production of star-tracking reticles
GSFC-11188 B73-10488 03
- QUARTZ CRYSTALS**
- Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
- Holographic analysis of thin films
M-FS-20823 B70-10654 08
- Piezoelectric transducer mosaic
ARC-10509 B72-10014 01
- Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05
- Thermoelectrically-cooled quartz microbalance
M-FS-23101 B75-10076 04
- Quartz crystal microbalances to measure wind velocity and air humidity
NPO-13462 B75-10124 03
- Increasing terminal strip efficiency at cryogenic temperatures
M-FS-23234 B75-10266 03
- QUARTZ LAMPS**
- Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
- Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
- High intensity heat-pulse source operates without cooling system
ARC-10178 B70-10694 03
- QUASARS**
- Quasars as very-accurate clock synchronizers
NPO-13276 B75-10114 02
- QUENCHING (COOLING)**
- Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04
- Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
- Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
- R**
- RACKS (FRAMES)**
- Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
- RACKS (GEARS)**
- Motor-driven rack-positioning device
ARC-10864 B75-10058 06

RADAR

Electronic scanning of 2-channel
monopulse patterns
GSFC-10299 B70-10485 02
Improved 135.6-MHz antenna
ARC-10743 B73-10500 02

RADAR ANTENNAS

Radial rotating antenna-feed system
GSFC-11013 B71-10025 01
Economical phased-array antenna for
environmental applications
HQ-10434 B71-10057 02
Vibration analysis by time-average
holography
LANGLEY-10614 B71-10333 03
Lightweight inflatable material with low
permeability
LANGLEY-10928 B73-10400 04

RADAR BEACONS

Scanning beacon locator system: A
concept
JSC-12593 B73-10318 02

RADAR BEAMS

Wide-angle, circularly polarized,
omnidirectional-array antenna
GSFC-10928 B71-10033 01
Composite antenna feed system operates
from VHF to X-band
GSFC-11046 B71-10410 02
Highly-efficient horn/reflector antenna
NPO-13568 B75-10330 01

RADAR IMAGERY

New pulsing technique may improve
radar ranging systems
ARC-10600 B72-10564 02

RADAR NAVIGATION

A range-rate extraction unit for
determining Doppler effect
GSFC-10750 B70-10025 01

RADAR RANGE

Ranging code processor
NPO-10066 B70-10060 02
New pulsing technique may improve
radar ranging systems
ARC-10600 B72-10564 02

RADAR RECEIVERS

General technique for measurement of
refractive index variations
HQ-10359 B70-10064 01
Radial rotating antenna-feed system
GSFC-11013 B71-10025 01

RADAR REFLECTORS

Investigation to identify paint coatings
resistive to microorganism growth
M-FS-20458 B71-10310 04
NASA-tricot - A lightweight radar
reflective, knitted fabric
LANGLEY-10776 B71-10342 04

RADAR TRACKING

A range-rate extraction unit for
determining Doppler effect
GSFC-10750 B70-10025 01
Inexpensive, large-diameter, radar
tracking and calibration spheres
XLA-11154 B71-10190 01
Atmospheric density variations related to
internal gravity waves
M-FS-21637 B72-10143 03

RADAR TRANSMISSION

A range-rate extraction unit for
determining Doppler effect
GSFC-10750 B70-10025 01
New pulsing technique may improve
radar ranging systems
ARC-10600 B72-10564 02

RADAR TRANSMITTERS

General technique for measurement of
refractive index variations
HQ-10359 B70-10064 01

RADIAL DISTRIBUTION

Mechanism of operation of the
TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
Stability of structural rings under
uniformly distributed radial loads
NPO-11396 B70-10236 06

RADIAL FLOW

Method of stabilizing fluoric vortex valves
and vortex amplifiers
LEWIS-10553 B70-10668 07
Computer program for the design of
axial-flow turbines
LEWIS-11029 B70-10669 09
Radial heat flux transformer
NPO-10828 B71-10311 03
Steady temperature and density
distributions in a gas containing heat
sources
LEWIS-10905 B71-10398 09
Experimental study of flow distribution
with circumferential manifolds
LEWIS-11649 B72-10738 06

RADIAL VELOCITY

Gas turbine combustor insensitive to
compressor outlet distortion
LEWIS-10286 B70-10312 07

RADIANCE

High solar intensity radiometer
LEWIS-11533 B72-10130 03

RADIANT FLUX DENSITY

Thermoelectric radiometer
ARC-10138 B70-10056 02
High intensity heat-pulse source operates
without cooling system
ARC-10178 B70-10694 03
Improved source of infrared radiation for
spectroscopy
M-FS-20613 B71-10031 03
Microwave dosimeter - A concept
HQ-10407 B71-10075 01

RADIANT HEATING

Heat-resistant pressure probe with
high-frequency response
NPO-11292 B70-10252 06
Radiant heating concept efficient for
light-transmitting windows
M-FS-20630 B70-10324 03
Device for measuring electric fields
ARC-10164 B72-10148 03
Electrical gas heater with large flow
range capability
LEWIS-12361 B75-10024 03

RADIATION

Automatic lightning location system
AEC-10077 B72-10372 02

RADIATION ABSORPTION

Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
Producing graphite with desired
properties
NUC-11001 B71-10042 04
Computer program optimizes design of
nuclear radiation shields
LEWIS-10998 B71-10400 09

RADIATION BELTS

Atmospheric pollution measurement by
optical cross correlation methods - A
concept
M-FS-12078 B71-10224 02

RADIATION COUNTERS

Improved charged-particle analyzer - A
concept
XAC-05506 B71-10283 03
Particle detection by a light-scattering
technique
ARC-10384 B72-10160 03
Particulate and aerosol detector
LANGLEY-11434 B73-10357 04
Coaxial anode improves sensitivity of gas
radiation counters
GSFC-11492 B74-10229 03
Particle impact location detector
GSFC-11829 B74-10230 03
Compact source of soft X-rays
HQ-10732 B74-10232 03
High-accuracy programable square-law
detector system
NPO-13525 B75-10240 02

RADIATION DAMAGE

Determination of diffusion lengths in
silicon by an X-ray method
LEWIS-10984 B70-10150 01
Metal-to-ceramic seals - A literature
survey
NPO-11430 B71-10116 08
Prevention of cathode damage from
positive ion bombardment
HQ-10688 B72-10654 03
A study of radiation environment in space
and its biological effects
HQ-10798 B72-10662 03

RADIATION DETECTORS

Neutron-image intensifier
ARG-10249 B70-10240 03
Improved heat shield/radiator
NPO-11105 B70-10318 03
Technique for experimental
determination of radiation interchange
factors in solar wavelengths
MSC-13476 B71-10066 03
Microwave dosimeter - A concept
HQ-10407 B71-10075 01
High current compensation network for
dc logarithmic amplifiers
NUC-10148 B71-10128 01
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03
A liquid radiation detector with high
spatial resolution
MSC-13965 B72-10034 03
Simple dynamic electromagnetic
radiation detector
LEWIS-11159 B72-10227 03
A Compton scatter attenuation gamma
ray spectrometer
M-FS-21441 B72-10487 03
Thin-film ultraviolet detector and
spectrometer
NPO-11432 B72-10701 03
Portable light detection system for the
blind
M-FS-22403 B73-10099 05
Cosmic dust or other similar outer-space
particles location detector
GSFC-11291 B73-10282 02
Binary-selectable detector holdoff
circuit
M-FS-22898 B73-10487 02
Improved channel multiplier for
radiation-and-particle detectors
NPO-12128 B74-10275 03
Microelectronic fabrication of
superconducting devices and circuits
NPO-13419 B75-10120 01

RADIATION DISTRIBUTION

Means for mapping radiated fields and for measuring differential movement of antenna elements

NPO-13053 B73-10452 02

RADIATION DOSAGE

Signal conditioner circuit for photomultiplier tube

XLA-10773 B70-10096 01

Biological handbook for engineers

M-FS-20349 B70-10255 05

A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles

LEWIS-10951 B70-10648 01

Microwave dosimeter - A concept

HQ-10407 B71-10075 01

Computer program optimizes design of nuclear radiation shields

LEWIS-10998 B71-10400 09

Improved intensifying screen reduces X-ray exposure

AEC-10090 B72-10232 03

Radiological control manual

M-FS-22092 B72-10460 03

RADIATION EFFECTS

Ultrasonic propagation in gases at high temperatures

HQ-10498 B70-10137 03

Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole

NUC-10227 B70-10356 03

Improved cover for cadmium sulfide solar cells

LEWIS-11003 B70-10584 01

Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices

LANGLEY-10630 B71-10334 01

Electron beam chemistry produces high purity metals

LEWIS-11639 B72-10439 04

Irradiation of MOS-FET devices to provide desired logic functions

GSFC-11061 B72-10719 01

Reductive cleavage of the peptide bond

LRL-10026 B73-10194 04

Multilayer flat electrical cable

ARC-10734 B73-10264 01

RADIATION HARDENING

Radiation hardening of metal-oxide semi-conductor (MOS) devices by boron

GSFC-11425 B74-10026 01

RADIATION HAZARDS

Detection and location of metal fragments in the human body

M-FS-14797 B70-10107 05

High-temperature rapid-response thermocouple for reducing atmospheres

NUC-10530 B70-10564 03

Three-dimensional pantograph for use in hazardous environments

NUC-10222 B70-10567 07

Instruction manuals for radiographic nondestructive testing

M-FS-21350 B71-10156 06

A study of radiation environment in space and its biological effects

HQ-10798 B72-10662 03

Safety monitoring system for radioisotope thermoelectric generators

NPO-13285 B73-10352 02

RADIATION MEASUREMENT

Inexpensive net solar flux radiometer

HQ-10087 B70-10296 03

Improved linings for integrating spheres

MSC-12237 B70-10413 03

Microwave dosimeter - A concept

HQ-10407 B71-10075 01

Qualifications and certification of nondestructive testing personnel

M-FS-20850 B71-10271 06

High solar intensity radiometer

LEWIS-11533 B72-10130 03

Radiological control manual

M-FS-22092 B72-10460 03

A Compton scatter attenuation gamma ray spectrometer

M-FS-21441 B72-10487 03

Method of measuring the thickness of radioactive thin films

LEWIS-11971 B74-10065 03

RADIATION MEASURING**INSTRUMENTS**

Helium window for shock-tube

monochromators

NPO-11852 B72-10556 03

Rotating turbine blade pyrometer

LEWIS-12218 B74-10068 01

Pocket-size microwave radiation hazard detector

NPO-11461 B74-10097 02

RADIATION MEDICINE

A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging

M-FS-20546 B71-10439 02

RADIATION PROTECTION

Instruction manuals for radiographic nondestructive testing

M-FS-21350 B71-10156 06

Investigation to identify paint coatings resistive to microorganism growth

M-FS-20458 B71-10310 04

Radioisotope thermionic power supply for spacecraft

ARC-10438 B72-10212 03

Radiological control manual

M-FS-22092 B72-10460 03

Flexible shielding system for radiation protection

LRL-10028 B72-10500 03

RADIATION SHIELDING

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide

HQ-10450 B70-10206 04

The effects of nuclear power generators upon electronic instrumentation

NPO-11217 B70-10272 03

Improved heat shield/radiator

NPO-11105 B70-10318 03

High temperature ion source

ERC-10197 B70-10379 03

Rugged, low-conductance, heat-flow probe

MSC-13443 B70-10622 03

Improved electron emitter

LEWIS-10814 B71-10388 03

Computer program optimizes design of nuclear radiation shields

LEWIS-10998 B71-10400 09

Monte Carlo program for the transport of neutrons and gamma rays

LEWIS-11403 B71-10490 09

An empirical relationship for the penetration of 1 to 3 MeV electrons

LEWIS-11495 B72-10144 04

Flexible shielding system for radiation protection

LRL-10028 B72-10500 03

Volume-reflecting dielectric heat shield

ARC-10803 B74-10074 04

RADIATION SOURCES

Improved source of infrared radiation for spectroscopy

M-FS-20613 B71-10031 03

A low cost "Air Mass 2" solar simulator

LEWIS-12266 B74-10086 02

RADIATION THERAPY

A high yield neutron target

LEWIS-12058 B74-10066 03

RADIATION TOLERANCE

Low-temperature radiation-resistant material for ball-bearing retainers

NUC-10058 B70-10576 04

Silicon solar cells improved by lithium doping

NPO-11390 B70-10585 04

Improved protection for silicon solar cells

LEWIS-11065 B70-10706 08

Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices

LANGLEY-10630 B71-10334 01

Liquid-hydrogen/nuclear-radiation ant seals

M-FS-21364 B71-10340 03

RADIATIVE HEAT TRANSFER

A stabilized low-frequency alternating-current electric arc

LEWIS-10442 B70-10065 01

Directional control of radiant heat

LEWIS-90237 B70-10321 03

Rugged, low-conductance, heat-flow probe

MSC-13443 B70-10622 03

The heat pipe - A simple, versatile, efficient heat transfer tool

NPO-11598 B71-10109 06

Computer program for thermal analysis of shadow shields in a vacuum

LEWIS-11236 B71-10115 09

Granular two-phase insulation systems

NPO-12068 B71-10290 04

Analysis and design of a flat central finned-tube radiator

LEWIS-10893 B71-10399 09

Opacified fibrous thermal insulation

LEWIS-11235 B71-10406 03

Thermal scale modeling

M-FS-21268 B71-10432 03

Radioisotope thermionic power supply for spacecraft

ARC-10438 B72-10212 03

RADIATORS

Multi-frequency resonant antenna

HQ-10215 B70-10098 02

RADIO ANTENNAS

Improved manual radio frequency direction finder

M-FS-20507 B70-10422 02

Enhancing efficiency of single, large-aperture antennas

HQ-10597 B71-10287 01

Radio direction finder

NPO-11573 B72-10508 02

RADIO ASTRONOMY

System automatically tunes hydrogen masers

HQ-10502 B70-10616 02

RADIO ATTENUATION

Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease

ERC-90066 B70-10376 01

RADIO BEACONS

Aircraft-crash-locating transmitter
features design improvements
M-FS-16609 B71-10213 02

RADIO COMMUNICATION

Signal phase switches offer greater
dynamic range
NPO-10709 B70-10393 01
COPTRAN - A method of optimum
communication systems design
ERC-10273 B70-10501 09
Astronaut Rescue Air Pack /ARAP/ and
Emergency Egress Air Pack /EEAP/
KSC-10522 B70-10680 03
Composite antenna feed system operates
from VHF to X-band
GSFC-11046 B71-10410 02
Mathematical analysis for the
performance assessment of space
communication parameters, IBM-360
version
GSFC-11523 B72-10675 09

RADIO CONTROL

Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03

RADIO DIRECTION FINDERS

Analysis and optimization of an
omnidirectional direction-finding system
M-FS-14346 B70-10112 02
Improved manual radio frequency
direction finder
M-FS-20507 B70-10422 02
Radio direction finder
NPO-11573 B72-10508 02

RADIO EQUIPMENT

P-I-N diode switch
GSFC-10661 B70-10278 01
High-power microstrip switch
NPO-11965 B73-10451 02

RADIO FILTERS

Third-order phase-locked loop receiver
NPO-11941 B74-10104 02
Continuous Fourier transform system
ARC-10466 B74-10170 02

RADIO FREQUENCIES

Mass spectrometer detects high
molecular weight components
HQ-10477 B70-10057 01
Radio frequency baseband recording
technique
HQ-10317 B70-10069 02
Graphical method to predict the dynamic
response of FM receivers
KSC-10111 B70-10119 01
Waveform simulator synthesizes complex
functions
NPO-10251 B70-10128 02
Simplified method for measuring the
impedance of RF power sources - A
concept
NPO-10734 B70-10212 02
Improved antenna pattern recorder
provides visual display of RF power
M-FS-20447 B70-10230 09
Block-coded communications
NPO-11397 B70-10242 02
P-I-N diode switch
GSFC-10661 B70-10278 01
Radiometric absolute noise-temperature
measurement system features improved
accuracy and calibration ease
ERC-90066 B70-10376 01
Improved manual radio frequency
direction finder
M-FS-20507 B70-10422 02

Fabrication of electroacoustic RF
amplifiers
ERC-10266 B70-10460 01
Improved modified turnstile antenna
MSC-12209 B70-10482 01
Solid state variable time delay
ERC-10032 B70-10492 01
Electronic flow simulator for eddy current
probe calibration
NUC-10211 B70-10533 01
Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
Multiple focusing magnets used for
velocity selection of atoms
GSFC-10128 B70-10581 03
Quadrupole ionization gage measures
ultrahigh vacuum
LANGLEY-10397 B70-10620 03
Intruder detection system
ARC-10097 B70-10638 02
Technique for lowering the noise figure
in RF amplifiers
HQ-10435 B70-10650 01
Nondestructive testing of adhesive bonds
by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Aircraft-crash-locating transmitter
features design improvements
M-FS-16609 B71-10213 02
Isosceles detector provides maximum
resolution in expanded range
GSFC-10932 B71-10279 01
Remote control radioactive-waste
removal system uses modulated laser
transmitter
LANGLEY-10311 B71-10343 03
Arc protection system for high-power RF
amplifiers
NPO-11560 B72-10099 02
Simple, reproducible methods for thermal
shock testing of brittle materials
NUC-11020 B72-10228 06
Broadband RF-distribution amplifier
NPO-11401 B72-10245 01
Narrowband, crystal-controlled
biomedical telemetry system
ARC-10708 B72-10255 01
Properties of ionization breakdown of air
at microwave frequencies and optimization
of component dimensions for maximum
microwave power
M-FS-21924 B72-10316 01
Interferometer using RF switching
matrix
GSFC-11051 B72-10462 01
Wide-range nuclear magnetic resonance
detector
LEWIS-11513 B72-10478 03
A proposed adjustable RF cable
connector
M-FS-24271 B73-10097 01
RF to digital converter
JSC-14419 B73-10306 02
Nomograph for prediction of
RF-breakdown voltages
NPO-11819 B73-10386 01
Meter circuit for tuning RF amplifiers
NPO-11865 B73-10389 02
RF antenna-pattern visual aids for field
use
KSC-10821 B73-10426 02
RF shielded connectors
GSFC-11215 B73-10509 01
Design method for minimizing RF voltage
breakdown
NPO-13408 B73-10520 01

RADIO FREQUENCY DISCHARGE

Amplitude-steered, pseudophased
antenna array
GSFC-11446 B74-10255 01

RADIO FREQUENCY IMPEDANCE PROBES

Plasma conductivity gage
ARC-10147 B70-10510 03

RADIO FREQUENCY INTERFERENCE

Statistical measurements of the
zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
A panel space for RFI shielding gaskets:
A concept
MSC-17827 B72-10735 01

RADIO FREQUENCY SHIELDING

Biomedical sensing and display concept
improves brain wave monitoring
ERC-10233 B70-10447 05
A panel space for RFI shielding gaskets:
A concept
MSC-17827 B72-10735 01
Metallized polymeric foam material
ARC-10860 B74-10218 04

RADIO INTERFEROMETERS

Quasars as very-accurate clock
synchronizers
NPO-13276 B75-10114 02

RADIO METEOROLOGY

Superconducting quantum-interference
devices
M-FS-23163 B75-10097 03

RADIO RECEIVERS

Improved manual radio frequency
direction finder
M-FS-20507 B70-10422 02
Self testing and repairing computer - A
concept
NPO-10567 B70-10452 09
Intruder detection system
ARC-10097 B70-10638 02
Implanted telemeter for
electrocardiogram and body temperature
XAC-08505 B72-10035 05
Radio direction finder
NPO-11573 B72-10508 02
Third-order phase-locked loop receiver
NPO-11941 B74-10104 02
Minicomputer-controlled frequency
generator
NPO-11962 B74-10163 02

RADIO RECEPTION

Enhancing efficiency of single,
large-aperture antennas
HQ-10597 B71-10287 01

RADIO SIGNALS

Improved manual radio frequency
direction finder
M-FS-20507 B70-10422 02
Location of vehicles using AM station
broadcasting signals
NPO-13217 B74-10300 02
Time-of-arrival lightning activity location
system
KSC-11006 B75-10297 02

RADIO TELEMETRY

Third-order phase-locked loop receiver
NPO-11941 B74-10104 02

RADIO TELESCOPES

Economical phased-array antenna for
environmental applications
HQ-10434 B71-10057 02

RADIO TRANSMISSION

Hyperbola-generator for location of
aperiodic events
LANGLEY-10312 B70-10695 06

RADIO TRANSMITTERS

Systems of coding and their implementation

NPO-11469 871-10006 09

Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector

NPO-11504 871-10131 03

Method for remotely sensing turbulence of planetary atmospheres

NPO-13154 874-10168 03

RADIO TRANSMITTERS

Self testing and repairing computer - A concept

NPO-10567 870-10452 09

RC filter with low distributed capacitance provides 60 db isolation at 500 MHz

GSFC-10983 870-10664 02

RADIO WAVES

Remotely actuated release mechanism

NPO-10698 870-10286 01

RADIOACTIVE DECAY

Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay

ARG-10281 870-10608 03

PPUAS--photopeak unfolding and self-shielding program

NPO-13188 873-10087 09

RADIOACTIVE ISOTOPES

Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride

ARG-10412 870-10233 04

Safety monitoring system for radioisotope thermoelectric generators

NPO-13285 873-10352 02

Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts

M-FS-22678 873-10518 06

Radioisotope thermal generator (RTG) power conditioner

LANGLEY-11313 874-10022 03

Radioisotope heater

ARC-10791 874-10051 03

RADIOACTIVE MATERIALS

Three-dimensional pantograph for use in hazardous environments

NUC-10222 870-10567 07

Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay

ARG-10281 870-10608 03

Radiological control manual

M-FS-22092 872-10460 03

Risk management technique for liquefied natural gas facilities

KSC-11005 875-10193 04

RADIOACTIVE WASTES

Remote control radioactive-waste removal system uses modulated laser transmitter

LANGLEY-10311 871-10343 03

RADIOACTIVITY

Radioisotope thermionic power supply for spacecraft

ARC-10438 872-10212 03

Improved format for radiocardiographic data

ARC-10742 873-10270 05

Computer system for monitoring radiorepirometry data

ARC-10784 873-10494 05

RADIOBIOLOGY

Improved format for radiocardiographic data

ARC-10742 873-10270 05

Computer system for monitoring radiorepirometry data

ARC-10784 873-10494 05

RADIOCHEMISTRY

Radiochemical synthesis of pure anhydrous metal halides

LEWIS-11860 873-10407 04

RADIOGRAPHY

Sonic impedance technique detects flaws in polyurethane foam spray-on insulation

M-FS-20561 870-10012 06

Reference for radiographic film interpreters

M-FS-16695 870-10189 03

Neutron-image intensifier

ARG-10249 870-10240 03

Slide checkout console

MSC-12318 870-10290 02

Ultrasonic detection of flaws in fusion butt welds

M-FS-20824 870-10514 08

Locating tube blockage that X-ray cannot detect

NUC-10386 871-10129 06

Instruction manuals for radiographic nondestructive testing

M-FS-21350 871-10156 06

Interpretation of aluminum-alloy weld radiography

M-FS-20943 871-10206 08

Multilayered printed circuit boards inspected by X-ray laminography

M-FS-20849 871-10226 02

Radiographic inspection specifications for electronic components

M-FS-20723 871-10438 01

Optimized techniques and requirements for computer improvement of structural weld radiographs

M-FS-21627 871-10492 09

Nondestructive testing of bond integrity in foam insulation/aluminum composites

M-FS-20786 871-10507 06

Nondestructive-test standards for evaluation of fiber-reinforced composites

M-FS-21288 872-10157 04

Improved intensifying screen reduces X-ray exposure

AEC-10090 872-10232 03

Radiation-induced nickel deposits

LEWIS-10965 872-10456 04

Neutron radiographic viewing system

M-FS-22024 872-10468 02

Video enhancement of X-ray and neutron radiographs

LEWIS-11944 873-10009 03

Two new methods to increase the contrast of track-etch neutron radiographs

LEWIS-11893 873-10027 03

Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts

M-FS-22678 873-10518 06

X-ray opaque additive for inspection of weld joints

M-FS-22896 873-10528 08

Improved dispensing targets for ion beam particle generators

NPO-13112 874-10108 03

Determination of bone mineral mass in vivo

MSC-14276 875-10168 05

RADIOISOTOPE BATTERIES

The effects of nuclear power generators upon electronic instrumentation

NPO-11217 870-10272 03

Thermally cascaded thermoelectric generator

NPO-10753 870-10280 03

Radioisotope thermal generator (RTG) power conditioner

LANGLEY-11313 874-10022 03

Economical technique for fragmentation testing

ARC-10792 874-10052 04

RADIOLOGY

Simple computer method provides contours for radiological images

ARC-10940 875-10146 09

RADIOLYSIS

Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay

ARG-10281 870-10608 03

Electron beam chemistry produces high purity metals

LEWIS-11639 872-10439 04

RADIOMETERS

Thermoelectric radiometer

ARC-10138 870-10056 02

Inexpensive net solar flux radiometer

HQ-10087 870-10296 03

Radiometric evaluation of antenna-feed component losses

NPO-11238 870-10344 02

Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease

ERC-90066 870-10376 01

A radiometric method for measuring the insertion loss of radome materials

NPO-11423 870-10519 02

Swept-frequency UHF radiometer for deep probes of earth - A concept

MSC-13428 870-10617 02

A new solid-state logarithmic radiometer

ARC-10287 870-10633 02

An improvement in blackbody cavity design

LANGLEY-10292 870-10711 03

Economical phased-array antenna for environmental applications

HQ-10434 871-10057 02

Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector

NPO-11504 871-10131 03

Wide-range logarithmic radiometer for measuring high temperatures

ARC-10254 871-10498 01

High solar intensity radiometer

LEWIS-11533 872-10130 03

Zone radiometer measurements on a model rocket exhaust plume

M-FS-21693 872-10357 02

High intensity solar cell radiometer

LEWIS-11549 872-10480 01

Assessment of water pollution by airborne measurement of chlorophyll

ARC-10648 872-10566 04

Program to produce horizontal stereographic print maps from Nimbus HRIR data

GSFC-11397 872-10606 09

High-temperature-radiation analyzer

ARC-10565 873-10017 03

Optical detection of oil on water

ARC-10649 873-10268 03

Wide-field reflective scanning optical systems

JSC-14096 873-10279 03

- Improved noise-adding radiometer for microwave receivers
NPO-11706 B73-10345 02
- RADOME MATERIALS**
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02
- RAIL TRANSPORTATION**
Remote coupling of air lines
NUC-10225 B71-10101 07
Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06
- RAILS**
Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06
- RAIN GAGES**
Water surface depth instrument
LANGLEY-10576 B70-10103 07
- RAMAN LASERS**
Atmospheric temperature measurements by Raman laser scattering
LEWIS-12065 B73-10251 03
- RAMAN SPECTRA**
Atmospheric temperature measurements by Raman laser scattering
LEWIS-12065 B73-10251 03
- RAMAN SPECTROSCOPY**
Angular device for optical filters
LANGLEY-11796 B75-10158 03
- RAMS (PRESSES)**
Fabrication of large ceramic electrolyte disks
ARC-10320 B72-10202 03
Apparatus for measuring electrical properties of materials
NPO-11749 B73-10025 03
- RANDOM ACCESS MEMORY**
Integrated circuit random-access memory decoder
ERC-10211 B70-10372 01
Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
- RANDOM ERRORS**
Thermal scale modeling
M-FS-21268 B71-10432 03
- RANDOM LOADS**
Probability of stress-corrosion fracture under random loading
NPO-13113 B73-10453 04
- RANDOM NOISE**
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
Self-synchronizing, bi-orthogonal coded PCM telemetry system
GSFC-11237 B71-10324 02
A study of the power spectral density of an FM signal
M-FS-21070 B72-10361 02
- RANDOM NUMBERS**
Pattern recognition technique
NPO-11337 B71-10187 06
Digital random-number generator
ARC-10096 B73-10266 09
- RANDOM PROCESSES**
Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09
Spectral analysis of multiple time series
M-FS-18859 B72-10614 09
Programmable random interval generator
JSC-14131 B73-10367 02
- RANDOM SAMPLING**
Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
- RANDOM SIGNALS**
On-line analysis of random vibrations
ARC-10154 B71-10284 09
Optical communication channel simulator system
GSFC-11877 B74-10258 01
- RANDOM VARIABLES**
Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
Microbial burden prediction model program
NPO-11709 B71-10401 09
Programmed physiological infusion system
ARC-10447 B72-10126 05
- RANDOM VIBRATION**
Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09
Improvements of Zeyded method for calculating flutter of flat panels
M-FS-20955 B72-10399 06
Spectral analysis of multiple time series
M-FS-18859 B72-10614 09
- RANGE (EXTREMES)**
Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
Pressure transducer with four-decade dynamic range
KSC-10384 B71-10323 01
Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 B71-10357 03
Pulse-width-modulated device for precision temperature control
NPO-11407 B72-10507 02
- RANGE AND RANGE RATE TRACKING**
A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
Fast Mars communication geometry program
LANGLEY-10658 B71-10002 09
- RANGE FINDERS**
Very high frequency digital rangine system
MSC-15763 B70-10284 02
Orbit, reentry, and landing attachment for globes
LANGLEY-10626 B70-10656 03
Lightning flash detection system
ARC-10562 B72-10272 02
Junction range finder
KSC-10108 B73-10191 02
- RANGEFINDING**
Laser altimeter
M-FS-13691 B70-10196 02
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
Code-regenerative clean-up loop for a ranging transponder
NPO-11707 B73-10141 02
Junction range finder
KSC-10108 B73-10191 02
- RANKINE CYCLE**
Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
- Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
Advanced high-temperature electromagnetic pump
LEWIS-11283 B72-10537 07
- RARE EARTH ELEMENTS**
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
- RARE GASES**
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04
Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08
Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
Improved ultraviolet resonance lamp
ARC-10030 B70-10237 01
Visual display panel functions as computer input/output device
ERC-10223 B70-10476 01
High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08
New method speeds body inert gas saturation and utilizes surface decompression
MSC-13543 B71-10330 05
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
Fluidic pressure regulators
ARC-10474 B72-10162 06
Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 B72-10249 04
A sensitive image intensifier which uses inert gas
LRL-10024 B72-10312 03
Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
LEWIS-11574 B72-10330 06
Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03
Proposed semiconductor film improvement
HQ-10685 B72-10438 04
- RAREFACTION**
Short-duration, transonic flow, variable-porosity test section
M-FS-20509 B70-10256 03
Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03
- RAREFIED GAS DYNAMICS**
Heat-operated cryogenic electrical generator
NPO-13303 B75-10116 03
- RAREFIED GASES**
Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
- RATIOMETERS**
DC-to-AC inverter ratio failure detector
NPO-13160 B74-10282 01
- RATIONS**
Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05
Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05

RATIOS

SUBJECT INDEX

RATIOS

Miniature fuel cells relieve gas pressure in sealed batteries

XGS-11370 B71-10064 02

Improved method for calculating pump thermodynamic suppression head

M-FS-20852 B71-10239 07

Variable ratio beam splitter for laser applications

ARC-10391 B71-10265 03

Dynamic response of viscous compressible fluids in rigid tubes

M-FS-20542 B71-10269 03

Improved charged-particle analyzer - A concept

XAC-05506 B71-10283 03

Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices

LANGLEY-10630 B71-10334 01

Simple two-speed tape transport drive

GSFC-10981 B71-10409 06

Thermal scale modeling

M-FS-21268 B71-10432 03

Psychrometric chart for physiological research

ARC-10394 B71-10470 03

Split stator vane row for fans and compressors

ARC-10288 B71-10528 06

An empirical relationship for the penetration of 1 to 3 MeV electrons

LEWIS-11495 B72-10144 04

RAY TRACING

Ray tracing program with options for diffraction gratings

GSFC-11305 B71-10294 09

Optical design and analysis program

GSFC-11393 B71-10456 09

General optics evaluation program (GENOPTICS)

GSFC-12038 B75-10294 09

RAYLEIGH-RITZ METHOD

Improved procedures for mass matrix-reductions in eigenvalue solutions

NPO-11619 B73-10384 09

RC CIRCUITS

Active resistance capacitance filter design

ARC-10020 B70-10034 01

Multiloop distributed RC active networks

ARC-10200 B71-10177 01

Low phase-shift amplifier

NPO-11663 B72-10185 01

Operational slope-limiting circuit

NPO-11773 B73-10346 01

Ankylosis-stabilized oscillator

GSFC-11513 B73-10392 02

Low-cost clearance indicator for high speed turbomachinery

LEWIS-12128 B73-10411 02

REACTANCE

Varactor diode assembly with low parasitic reactances

GSFC-11617 B75-10031 01

REACTION

Multiple reaction mass and isolation system

M-FS-24119 B72-10441 06

REACTION KINETICS

Photoionization mass spectrometer

HQ-10167 B70-10113 03

Chemical kinetics computer program for static and flow reactions

LEWIS-11467 B72-10580 04

Aerotherm chemical equilibrium (ACE) computer program

LEWIS-11722 B72-10739 09

REACTION TIME

Preparation of thin polymer films for infrared reaction rate studies

MSC-15893 B70-10551 04

High mobility work station restraint support

MSC-12419 B71-10301 07

Synthesis of dynamic systems

M-FS-21490 B71-10491 09

New reaction tester accurate within 56 microseconds

MSC-13604 B72-10031 05

Visual sensitivity tester

ARC-10329 B72-10203 05

Hand tremor and activity sensor

ARC-10849 B75-10057 05

REACTIVITY

Investigation of the reactivity of organic materials in liquid oxygen

M-FS-20576 B70-10285 04

Synthesis of fluorinated organic compounds using oxygen difluoride

NPO-12061 B71-10154 04

Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide

M-FS-21113 B72-10321 04

REACTOR DESIGN

Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss

LEWIS-12445 B75-10152 02

Simplified heat engine

NPO-13613 B75-10334 07

REACTOR MATERIALS

Producing graphite with desired properties

NUC-11001 B71-10042 04

REACTOR TECHNOLOGY

Saturable-reactor motor starter reduces line voltage fluctuations

M-FS-18921 B71-10013 01

Improved dispensing targets for ion beam particle generators

NPO-13112 B74-10108 03

REACTORS

Hydrogen eliminator

ARC-10408 B72-10208 03

READERS

Nonvolatile read/write memory element - A concept

GSFC-10993 B71-10346 01

Solid-state data interpretation system - A concept

M-FS-20587 B71-10366 02

Programmed physiological infusion system

ARC-10447 B72-10126 05

READOUT

Economic gas chromatograph system for subambient pressure gas sampling

M-FS-16298 B70-10220 02

Noncontacting-optical-strain device

NPO-10778 B70-10292 03

Dual current readout for precision plating

MSC-15673 B70-10392 01

New data acquisition system records bearing measurements directly

LEWIS-10510 B70-10503 06

Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept

KSC-10394 B70-10515 01

Solar cell power scanner

LEWIS-11280 B71-10223 02

Position sensing materials wound on a reel

GSFC-11902 B75-10249 07

Simple temperature sensor with direct readout

LANGLEY-11818 B75-10260 01

REAL GASES

Accurate measurement of gas volumes by liquid displacement

ARC-10723 B72-10699 03

REAL TIME OPERATION

Technique for analyzing human respiratory process

MSC-13436 B70-10528 05

Digital input is buffered to real-time analog display

KSC-10397 B70-10562 01

Microprogram scheme for automatic recovery from computer error

MSC-13387 B70-10642 09

Performance evaluation system for inertial navigation equipment

MSC-13542 B71-10087 02

A pseudo random-access synchronous meteorological satellite system

GSFC-10895 B71-10220 02

A real-time statistical time-series analyzer

MSC-12428 B71-10276 02

On-line analysis of random vibrations

ARC-10154 B71-10284 09

Vibration testing and analysis using holography

M-FS-21050 B71-10352 03

Improved system for measuring speed of rotating machinery

ARC-10413 B72-10179 07

Interactive graphical computer-aided design system

M-FS-23157 B75-10096 01

Central control element expands computer capability

M-FS-23216 B75-10103 02

Real-time video correlator

M-FS-23200 B75-10265 02

Electrocardiogram signal analyzer

MSC-12710 B75-10269 05

Multichannel high-speed correlator

NPO-13097 B75-10323 02

REBREATHING

Aircrew oxygen system

ARC-10247 B72-10195 05

Spacecraft oxygen recovery system

ARC-10868 B74-10220 05

RECEIVERS

Immersed ultrasonic inspection of high acoustical attenuative structures

MSC-15702 B70-10055 03

Telemetry for impact acceleration measurements

ARC-10289 B70-10079 01

Graphical method to predict the dynamic response of FM receivers

KSC-10111 B70-10119 01

Laser-Doppler gas velocimeter

M-FS-20583 B70-10143 02

Equipment-tolerant range code demodulation method - A concept

M-FS-13987 B70-10267 01

Signal phase switches offer greater dynamic range

NPO-10709 B70-10393 01

Characteristics of step-recovery-diode frequency multipliers

M-FS-20558 B70-10505 01

- A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02
- Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
- Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
- Technique for lowering the noise figure in RF amplifiers
HQ-10435 B70-10650 01
- RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
- Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
- Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
- A frequency division multiplex technique for transmitting commands
KSC-10521 B71-10169 02
- An improved telemetry system
ARC-10336 B71-10201 01
- Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
- Self-synchronizing, bi-orthogonal coded PCM telemetry system
GSFC-11237 B71-10324 02
- Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
- Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02
- Signal to noise measurement circuit
GSFC-11239 B72-10102 01
- Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07
- Narrowband, crystal-controlled biomedical telemetry system
ARC-10708 B72-10255 01
- Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 B74-10025 02
- Anti-multipath digital signal detector
LANGLEY-11379 B74-10137 02
- Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02
- Signal mixer for optical heterodyne receiver
M-FS-23251 B75-10307 03
- Synchronizer for random binary data
NPO-13286 B75-10325 02
- RECIPROCATION**
- Novel valve for reciprocating compressors - Concept
MSC-15060 B70-10160 07
- A rapid, precise, reciprocating-movement color filter system
GSFC-11255 B72-10497 07
- Thermal-powered reciprocating pump
NPO-11417 B72-10723 06
- RECLAMATION**
- Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
- RECOIL PROTONS**
- Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
- RECONSTRUCTION**
- New tooth enamel from brushite crystals
ERC-10338 B74-10199 05
- RECORDERS**
- Recorder/processor apparatus
GSFC-11553 B74-10042 03
- RECORDING**
- Precise audio-frequency markers for nuclear magnetic resonance spectra
NPO-11147 B70-10086 02
- Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 B70-10230 09
- Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09
- Fast peak selector for mass spectrometer
LANGLEY-10268 B71-10009 04
- Computer-controlled mass spectrometer for on-line gas analysis
NPO-11427 B71-10191 03
- A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
- Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03
- RECORDING HEADS**
- Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
- Image data rate converter: A concept
NPO-11659 B73-10277 02
- Subminiature micropower digital recorder
ARC-10746 B73-10491 02
- RECORDING INSTRUMENTS**
- Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 B70-10508 01
- System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
- Human performance measuring device
LANGLEY-10679 B70-10619 05
- Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
- Hyperbola-generator for location of aperiodic events
LANGLEY-10312 B70-10695 06
- Biomedical recording system
MSC-13653 B70-10697 05
- A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06
- Universal interface enables one recorder to serve numerous measuring instruments
M-FS-15134 B71-10011 01
- Automatic reference level control for an antenna pattern recording system
M-FS-20257 B71-10014 01
- Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
- Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07
- Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02
- High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
- Automatic amino acid analyzer
ARC-10215 B71-10165 04
- Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
- Rapid method for sampling metals for materials identification
MSC-17332 B71-10320 04
- Television multiplexing system
KSC-10654 B71-10391 02
- A remote test parameter profile display
LEWIS-11872 B73-10006 02
- Bipotential monitoring with inexpensive office-type cassette recorders
M-FS-22566 B73-10167 02
- Hologram recording tubes
M-FS-22590 B73-10330 03
- Recorder/processor apparatus
GSFC-11553 B74-10042 03
- Magnetometer with miniature transducer and automatic transducer scanning apparatus
LANGLEY-11617 B74-10142 02
- RECORDS**
- Automated preventive maintenance program
GSFC-11408 B71-10500 09
- Video information system
M-FS-21711 B72-10267 09
- RECOVERABILITY**
- Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03
- RECREATION**
- Novel wave generator adaptable to indoor surfing
LEWIS-11096 B70-10563 03
- Systems management techniques and problems
M-FS-21401 B71-10361 01
- RECRYSTALLIZATION**
- Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
- Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
- RECTIFICATION**
- Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
- Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 B70-10230 09
- A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01
- RF-controlled implantable solid state switch
ARC-10136 B71-10426 01
- RECTIFIERS**
- Precision full-wave rectifier
ARC-10101 B70-10161 02
- Dual current readout for precision plating
MSC-15673 B70-10392 01
- Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10256 B70-10444 04
- Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02

RECURSIVE FUNCTIONS

Semiconductor cooling by thin-film thermocouples
 ERC-10149 B70-10495 01
 Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
 NUC-10239 B71-10043 01
 Microwave dosimeter - A concept
 HQ-10407 B71-10075 01
 Improved relay chatter detector
 NPO-10355 B71-10292 01
 Circuit controls turn-on current
 NPO-11339 B72-10079 01
 Tornado detector and alarm
 M-FS-20915 B72-10106 01
 High temperature gallium phosphide rectifiers
 LEWIS-11804 B72-10673 01

RECURSIVE FUNCTIONS

Derivation of a general perturbation solution - Its application to determination of orbit
 MSC-13377 B70-10442 03

REDUCTION (CHEMISTRY)

Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 B70-10021 01
 Mechanism of operation of the TFE-bonded gas-diffusion electrode
 HQ-10536 B70-10059 01
 Foaming-electrolyte fuel cell
 HQ-10147 B70-10097 01
 New electrocatalysts for hydrogen-oxygen fuel cells
 HQ-10537 B70-10145 01
 Reductive cleavage of the peptide bond
 LRL-10026 B73-10194 04

REDUNDANCY

Elimination of redundancy in telemetered data
 HQ-10585 B70-10431 06
 Redundant electronic circuit provides fail-safe control
 NUC-10389 B70-10565 01
 High-reliability release mechanism
 LEWIS-11233 B71-10080 07
 Digital telemetry system eliminates data redundancy
 MSC-12388 B71-10082 02
 Hybrid redundancy system for improving reliability - A concept
 NPO-11546 B71-10132 01
 Study of nondestructive techniques for redundancy verification
 KSC-10661 B71-10258 02
 Voter comparator switch provides fail safe data communications system - A concept
 MSC-13932 B71-10504 02
 Piezoelectric actuator uses sequentially-excited multiple elements: A concept
 NPO-11527 B72-10096 01
 Techniques for improving reliability of computers
 M-FS-21326 B72-10109 02
 Dual redundant core memory systems
 MSC-13993 B72-10261 09
 The design of an automated verification of redundant systems
 KSC-10702 B72-10295 02
 Ball detent mechanism
 M-FS-21735 B72-10470 07
 Redundant data management system
 M-FS-21831 B72-10589 09

Redundancy approaches in bubble domain memories
 M-FS-21915 B72-10643 01
 Satellite auxiliary propulsion systems
 NPO-11744 B73-10023 06
 A method for economic evaluation of redundancy levels for aerospace systems
 KSC-10754 B73-10067 09
 Redundant screwjack
 JSC-19200 B73-10070 07
 Programed asynchronous serial data interrogation in a two-computer system
 GSFC-11778 B75-10184 02

REDUNDANCY ENCODING

Central control element expands computer capability
 M-FS-23216 B75-10103 02

REDUNDANT COMPONENTS

Self testing and repairing computer - A concept
 NPO-10567 B70-10452 09
 Ground computer test trap
 KSC-10574 B70-10561 09
 Active parallel redundancy for electronic integrator-type control circuits
 NUC-10231 B71-10040 01
 Efficient digital comparison technique for logic circuits
 M-FS-21080 B71-10218 02
 Minimum weight meteoroid shielding determination
 MSC-17017 B71-10447 09
 Analytic procedures for determining dimensional redundancies in electronic devices
 HQ-10709 B72-10656 09

REELS

Self-replaceable thermocouple for molten steel bath - A concept
 NUC-10223 B71-10125 01
 Microorganism sample device
 LANGLEY-10258 B71-10487 05
 Position sensing materials wound on a reel
 GSFC-11902 B75-10249 07

REFERENCE ATMOSPHERES

New method speeds body inert gas saturation and utilizes surface decompression
 MSC-13543 B71-10330 05

REFERENCE SYSTEMS

Automatic computer subprogram selection from application-program libraries - ALTLIB
 LANGLEY-11124 B72-10607 09
 Program for creating an operating system generation cross reference index (SGINDEX)
 GSFC-11612 B72-10650 09
 Computer system for library access
 GSFC-11952 B75-10292 09

REFINING

Sensitive gaseous hydrogen detection system
 M-FS-21161 B71-10209 04
 Reconstituted asbestos matrix for fuel cells
 MSC-12568 B75-10339 04

REFLECTANCE

High efficiency optical beamsplitter designed for operation in the infrared region
 GSFC-10721 B70-10211 02
 Noncontacting-optical-strain device
 NPO-10778 B70-10292 03
 Inexpensive net solar flux radiometer
 HQ-10087 B70-10296 03

SUBJECT INDEX

Directional control of radiant heat
 LEWIS-90237 B70-10321 03
 Heat-rejection windows for telescopes
 M-FS-20634 B70-10386 04
 Laser wavelength selector and output coupler
 ERC-10248 B70-10507 02
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Ultraviolet interferometer
 HQ-10546 B71-10026 03
 Nonflammable organic-base paint for oxygen-rich atmospheres
 M-FS-20486 B71-10077 04
 Improved reflective coating for integrating spheres
 GSFC-10855 B71-10110 03
 Inexpensive, large-diameter, radar tracking and calibration spheres
 XLA-11154 B71-10190 01
 Granular two-phase insulation systems
 NPO-12068 B71-10290 04
 Determination of radiation interchange factors
 MSC-13475 B71-10295 09
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Program for determination of radiation interchange factors
 MSC-17563 B72-10071 09
 Scanning technique for tracking small eye-movements
 ARC-10488 B72-10220 05
 Interferometric rotation sensor
 ARC-10278 B72-10274 03
 Optical device for producing color line scan display from monochrome oscilloscope traces
 LANGLEY-10896 B72-10375 03
 Laser beam deflection control: A concept
 MSC-13814 B72-10411 02
 Unsupported thin film beam splitter
 GSFC-10525 B72-10471 02
 Optical monitoring system
 M-FS-21692 B73-10050 03
 Integrating-sphere coating
 GSFC-11214 B73-10403 04
 Volume-reflecting dielectric heat shield
 ARC-10803 B74-10074 04
 Commercially available black chrome is an effective solar collector coating
 LEWIS-12159 B74-10121 04
 A nondispersive infrared analyzer
 ARC-10631 B75-10082 03

REFLECTED WAVES
 Laser method for finding axis of rotation
 ARC-10388 B70-10439 03
 High-accuracy detector for laser radar
 MSC-13275 B70-10570 01
 Dual-wavelength system monitors deposition of films - A concept
 M-FS-20675 B70-10658 03
 Soft X-ray lasers using distributed-feedback reflection: A concept
 NPO-13532 B75-10239 03

REFLECTION
 Improved heat shield/radiator
 NPO-11105 B70-10318 03
 Technique for experimental determination of radiation interchange factors in solar wavelengths
 MSC-13476 B71-10066 03

SUBJECT INDEX

Ray tracing program with options for diffraction gratings
 GSFC-11305 B71-10294 09
 Hybrid holographic system
 M-FS-20074 B72-10260 03
 Optical enhancement of sensitivity in laser Doppler velocity systems
 ARC-10653 B72-10310 03

REFLECTOMETERS

Optical contamination during thermal testing in vacuum
 M-FS-20736 B70-10659 03

REFLECTORS

Radiant heating concept efficient for light-transmitting windows
 M-FS-20630 B70-10324 03
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 B70-10568 05
 Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03
 High intensity heat-pulse source operates without cooling system
 ARC-10178 B70-10694 03
 Vibration detection using lasers
 ARC-10389 B71-10145 03
 Enhancing efficiency of single, large-aperture antennas
 HQ-10597 B71-10287 01
 Laser device provides accurate reference to true gravitational vertical
 ARC-10444 B71-10479 07
 Optical inspection tool for interior surfaces of fluid lines
 M-FS-15162 B71-10513 06
 Improving laser beam coherence - A concept
 ARC-10417 B71-10527 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Compensating subreflector for two-reflector antennas: A concept
 NPO-11503 B72-10093 06
 Conical electromagnetic radiation flux concentrator
 M-FS-21613 B72-10147 03
 A dual-beam actinic light source for photosynthesis research
 ARC-10351 B72-10205 05
 Redirecting electromagnetic beams through wide angles
 ARC-10602 B72-10307 03
 Highly-efficient horn/reflector antenna
 NPO-13568 B75-10330 01

REFRACTION

Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Evaluation of jet engine noise
 M-FS-21416 B72-10263 03
 An improved apochromatic wedge utilizing optical molecular contact bonding
 GSFC-11082 B72-10388 03

REFRACTIVITY

General technique for measurement of refractive index variations
 HQ-10359 B70-10064 01
 Estimating sensitivity of vacuum gages
 LEWIS-11007 B70-10099 03
 Automatic optometer operates with infrared test pattern
 ARC-10095 B70-10401 05

Multipass holographic interferometer improves image resolution
 HQ-10499 B70-10426 03

Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 B70-10568 05
 Less-expensive Rochon prisms
 M-FS-20554 B70-10681 03
 Improved reflective coating for integrating spheres
 GSFC-10855 B71-10110 03
 Optical enhancement of photomultiplier sensitivity
 ARC-10213 B71-10113 03
 Ray tracing program with options for diffraction gratings
 GSFC-11305 B71-10294 09
 Measuring internal dimensions of small transparent objects
 LANGLEY-10712 B71-10505 08
 Optical bonding agents for severe environments
 ARC-10459 B72-10063 04
 Erasable holographic medium using cis-trans isomerization
 M-FS-22062 B72-10720 03
 Method for estimating solubility parameter
 NPO-11647 B73-10022 04

REFRACTOMETERS

Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
 NPO-13614 B75-10335 03

REFRACTORY MATERIALS

Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 LEWIS-10515 B70-10185 04
 High temperature glass coatings for superalloys and refractory metals
 LEWIS-10700 B70-10430 08
 Simple bonding technique for high-temperature ceramic coatings
 LEWIS-11085 B70-10580 08
 Peak wind speed anemometer /maxometer/
 M-FS-20916 B71-10023 07
 Improved brazing technique for pyrolytic graphite
 NPO-12026 B71-10293 08
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
 Practical method of diffusion-welding steel plate in air
 LEWIS-11387 B71-10455 08
 Graphite-reinforced aluminum composite
 M-FS-21077 B71-10482 04
 Specimen for high-temperature tensile tests
 ARC-10531 B72-10028 04
 Floating zone process for drawing small diameter fibers of refractory materials
 LEWIS-11380 B72-10491 04
 Refractory inserts used to form cooling passages in cast superalloy turbine vanes
 LEWIS-11169 B73-10013 08
 Polyimide fiber-glass composite resists high temperatures
 ARC-10782 B73-10505 04

REFRACTORY METALS

Glass fiber addition strengthens low-density ablative compositions
 LANGLEY-11288 B74-10027 04
 Process for fabrication of stabilized aluminum phosphate fibers
 LANGLEY-11526 B74-10185 08
 Advanced tungsten fiber-reinforced nickel superalloy
 LEWIS-12394 B74-10248 04
 Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
 LEWIS-12502 B75-10138 03
 A new high temperature noble metal thermocouple pairing
 LEWIS-12545 B75-10245 03
 Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
 LEWIS-12562 B75-10246 04
 Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
 LEWIS-12554 B75-10290 04
 Repair of damaged insulation tiles
 MSC-19549 B75-10321 04

REFRACTORY METAL ALLOYS

Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 LEWIS-10515 B70-10185 04
 Explosive bonded TZM-wire-reinforced C129Y columbium composites
 M-FS-20925 B71-10356 04
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04
 Combined high vacuum/high frequency fatigue tester
 LEWIS-11210 B71-10405 06
 Insulating effectiveness of self-spacing dimpled foil
 LEWIS-10941 B72-10406 04
 Development of chip passivated monolithic complementary MISFET circuits with beam leads
 M-FS-22264 B72-10696 01
 Braze alloys for high temperature service
 LEWIS-11374 B73-10205 06
 A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
 LEWIS-11827 B74-10002 04
 New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
 LEWIS-11828 B74-10003 04
 Addition of silicon improves oxidation resistance of nickel based superalloys
 LEWIS-12138 B74-10007 04
 Rapid method for determining nitrogen in tantalum and niobium alloys
 LEWIS-12237 B74-10085 04

REFRACTORY METALS

Method of joining metals of significantly different expansion rates
 NPO-12076 B71-10028 08
 Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 B71-10212 08
 Unique intermetallic compounds prepared by shock wave synthesis
 M-FS-20861 B71-10216 04
 Granular two-phase insulation systems
 NPO-12068 B71-10290 04
 Copper/nickel eutectic brazing of titanium
 ARC-10337 B71-10525 08

- Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
- High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04
- Tungsten-reinforced tantalum
LEWIS-11750 B72-10684 04
- Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 B73-10003 08
- Binary alloys for refractory-metal brazing
LEWIS-12184 B74-10125 08
- REFRIGERANTS**
- Refrigerated cutting tools improve machining of superalloys
LANGLEY-10488 B71-10076 08
- Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
- REFRIGERATING**
- Low temperature uses of helium
LEWIS-11171 B70-10673 03
- The deterioration of intermediate moisture foods
MSC-13827 B71-10332 05
- Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
- Fill and vent quick disconnect
M-FS-21822 B72-10645 07
- A two-degree Kelvin refrigerator
NPO-13459 B75-10181 03
- REFRIGERATING MACHINERY**
- Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
- Two-stage coaxial gas compressor
ARC-10426 B72-10210 06
- Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
- Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
- Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
- REFRIGERATORS**
- Torch kit for welding in difficult areas
MSC-15704 B71-10070 08
- Simplified heat engine
NPO-13613 B75-10334 07
- REGENERATION (ENGINEERING)**
- Sorption vacuum trap
ERC-90051 B70-10449 06
- Pseudo-saturating power converter
NPO-11368 B72-10042 01
- Space-suit carbon dioxide absorption system: A concept
ARC-10546 B72-10168 05
- Self-regenerating desiccant system
M-FS-23057 B74-10266 07
- REGENERATIVE COOLING**
- Fabrication techniques for thorium-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
- Fabrication of cooled, graphite-lined structures
LEWIS-11741 B72-10593 08
- Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
- Regenerative cooling design and analysis computer program
LEWIS-12110 B75-10015 09
- REGENERATORS**
- Molecular sieves control contamination and insulate in thermal regenerators - A concept
GSFC-10910 B70-10424 07
- Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
- Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
- REGISTERS (COMPUTERS)**
- Array multiplier
ERC-90076 B70-10047 02
- Fault detection monitor circuit provides "self-heal capability" in electronic modules - A concept
KSC-10394 B70-10515 01
- Dual redundant core memory systems
MSC-13993 B72-10261 09
- REGRESSION ANALYSIS**
- Sunspot analysis and prediction
M-FS-21724 B72-10317 03
- Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09
- REGULATIONS**
- Risk management technique for liquefied natural gas facilities
KSC-11005 B75-10193 04
- REGULATORS**
- Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
- Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03
- Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
- Portable lightweight bandsaw
M-FS-16927 B71-10237 07
- Ball detent mechanism
M-FS-21735 B72-10470 07
- REINFORCED PLASTICS**
- Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03
- Flame-resistant thin panels of glass fabric-polyimide resin laminates
MSC-15562 B70-10490 04
- Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
- Built-in bleeder system in laminated plastic structures
MSC-17713 B72-10562 08
- Production of circular polymer-glass fabric composites
M-FS-22125 B73-10069 04
- Preparation of prepreg graphite tape with insoluble polymer
JSC-14313 B73-10084 04
- Millimeter-wave antenna system
GSFC-10949 B73-10333 01
- Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04
- Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06
- Tailor making high performance graphite fiber reinforced PMR polyimides
LEWIS-12416 B75-10137 04
- Lightweight orthotic braces
LANGLEY-11894 B75-10303 05
- REINFORCED SHELLS**
- Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
- Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
- Isogrid structure
M-FS-21567 B72-10323 06
- REINFORCEMENT**
- Modular support blocks for fluid lines
MSC-19335 B74-10023 07
- REINFORCEMENT (STRUCTURES)**
- Unidirectional composite stiffening
HQ-10266 B70-10054 04
- Design and evaluation of three-phase fibrous composite structures
HQ-10267 B70-10205 04
- Flexible protection for metal bellows
KSC-10520 B70-10350 06
- A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04
- Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
- Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
- Promising born/graphite/resin composites
M-FS-21126 B71-10217 04
- Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 B71-10356 04
- Graphite-reinforced aluminum composite
M-FS-21077 B71-10482 04
- Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
- New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
- Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
- Isogrid structure
M-FS-21567 B72-10323 06
- Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04
- High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
- REINFORCING FIBERS**
- Biaxial prestressing of brittle materials
M-FS-20272 B70-10316 04
- Fabricating subscale components for application to full-scale parts
M-FS-20805 B70-10390 07
- Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
- New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
- Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
- Technique for the polymerization of monomers for PPO/graphite fiber composites
LEWIS-11879 B73-10014 04

SUBJECT INDEX

An inexpensive and effective method for calculating the strength of randomly reinforced fiber composites
LEWIS-11985 B73-10039 04

Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04

Glass fiber addition strengthens low-density ablative compositions
LANGLEY-11288 B74-10027 04

Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04

Advanced tungsten fiber-reinforced nickel superalloy
LEWIS-12394 B74-10248 04

Controlled intermittent interfacial bond concept for composite materials
LANGLEY-11628 B74-10264 04

Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
LEWIS-12366 B75-10066 04

RELATIVITY

System automatically tunes hydrogen masers
HQ-10502 B70-10616 02

RELAXATION (PHYSIOLOGY)

Novel wave generator adaptable to indoor surfboarding
LEWIS-11096 B70-10563 03

RELAXATION OSCILLATORS

Small, efficient power supply for xenon lamps
MSC-13637 B70-10684 01

Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05

RELAY SATELLITES

Scanning beacon locator system: A concept
JSC-12593 B73-10318 02

RELEASING

Controlled release of free-falling test models
NPO-11314 B70-10077 07

Remotely actuated release mechanism
NPO-10698 B70-10286 01

Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 B70-10395 06

Foolproof quick-release locking pin
M-FS-18495 B70-10409 07

Easy insert, easy release toggle bolt fastener
ARC-10140 B70-10509 07

Disc pack cleaning table saves computer time
LANGLEY-10590 B70-10532 09

Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07

High-reliability release mechanism
LEWIS-11233 B71-10080 07

Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07

Fluid operated quick release mechanism
M-FS-20205 B72-10640 07

RELIABILITY

System availability management technique for reliability and maintainability analysis
KSC-10315 B70-10063 09

Mechanical characteristics of the Bossler coupling
HQ-10508 B70-10072 07

Solid state bistable power switch
ERC-10290 B70-10383 01

Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01

High-reliability release mechanism
LEWIS-11233 B71-10080 07

Digital-coded matrix system simplifies design and construction of flow charts
MSC-13539 B71-10086 09

Unified hatch system
MSC-15813 B71-10095 06

Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06

Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01

Generalized safety equation - A concept
M-FS-20522 B71-10183 06

Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06

Aircraft-crash-locating transmitter features design improvements
M-FS-16609 B71-10213 02

Study of nondestructive techniques for redundancy verification
KSC-10661 B71-10258 02

Automatic transmission line monitor
KSC-10385 B71-10288 02

Precision calibration and reference voltage source for data acquisition systems
M-FS-20950 B71-10298 02

Novel shift register eliminates logic gates and power switching circuits
GSFC-10517 B71-10322 01

Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 B71-10375 08

Flat conductor cable handbook
M-FS-21009 B71-10379 01

Screening method improves performance of nickel-cadmium batteries
GSFC-11260 B71-10411 04

Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03

Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01

Techniques for improving reliability of computers
M-FS-21326 B72-10109 02

Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01

Guidelines for fabrication of hybrid microcircuits
M-FS-21964 B72-10393 01

A method for economic evaluation of redundancy levels for aerospace systems
KSC-10754 B73-10067 09

Redundant screwjack
JSC-19200 B73-10070 07

Response of tantalum capacitors to fast transient overvoltages
MSC-14822 B75-10274 01

Reliability computation from reliability block diagrams
NPO-13304 B75-10276 07

RELIABILITY ANALYSIS

Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06

Reliability Analysis Model
M-FS-14513 B70-10614 09

Predicting service life margins
M-FS-24015 B71-10194 06

Statistical analysis tables for truncated or censored samples
M-FS-21024 B71-10351 03

Reliability analysis based on operational success criteria
ARC-10490 B72-10214 09

Leak decay method of helium bombardment leak testing
M-FS-24109 B72-10381 06

Improved operation of rechargeable oxygen electrodes
LEWIS-11619 B72-10479 01

A system for early warning of bearing failure
M-FS-21877 B72-10494 06

Redundancy approaches in bubble domain memories
M-FS-21915 B72-10643 01

Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
GSFC-11523 B72-10675 09

A new algorithm for finding survival coefficients employed in reliability equations
M-FS-22295 B73-10256 09

Optimization of structures on the basis of fracture mechanics and reliability criteria
NPO-11645 B73-10276 06

Reliability data for electronic and electromechanical components: A report
NPO-13153 B74-10280 01

RELIABILITY ENGINEERING

Zipper-type electrical connectors
NPO-11639 B72-10159 01

Mathematical techniques for estimating operational readiness of complex systems
MSC-17694 B72-10335 09

Expandable coating cocoon leak detection system
M-FS-21848 B72-10380 06

Specification guidelines for hybrid microcircuits
M-FS-22090 B72-10474 01

A tool for measuring elevator cable tension
KSC-10708 B72-10509 07

Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06

Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04

Design criteria monograph for pressurized metal cases
LEWIS-11835 B72-10633 04

Design criteria monograph on solid rocket motor igniters
LEWIS-11826 B72-10715 06

Satellite auxiliary propulsion systems
NPO-11744 B73-10023 06

RELIEF VALVES

An explosion-proof battery case
MSC-12335 B70-10304 01

Inexpensive tamper proof safety relief valve
KSC-10470 B70-10320 07
Safe suspension of specimens or clusters during dynamic testing - A concept
M-FS-15110 B70-10559 07
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
Multipurpose top for liquid helium Dewar
ARC-10533 B72-10302 03
An economical vent cover
M-FS-20692 B72-10348 07
High-volume pressure relief valve
KSC-10707 B72-10536 07
Thermally actuated valve
NPO-11846 B73-10347 06
Design criteria monograph for pressure regulators, relief valves, check valves, burst disks, and explosive valves
LEWIS-12168 B74-10010 07
Programmed-pressure air supply for positive-pressure breathing system
ARC-10845 B74-10075 05

REMOTE CONSOLES

Video information system
M-FS-21711 B72-10267 09
Remote file inquiry (RFI) system
KSC-10837 B75-10155 09

REMOTE CONTROL

Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01
Improved mechanical remote control assembly - Concept
M-FS-16249 B70-10144 07
Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
High-powered automatic latching device
MSC-15474 B70-10198 07
Hydraulic brake safety valve
M-FS-16444 B70-10207 07
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Noncontacting-optical-strain device
NPO-10778 B70-10292 03
Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 B70-10348 07
Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
Solid state remote circuit selector switch
LEWIS-10387 B70-10579 01
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03
Remote coupling of air lines
NUC-10225 B71-10101 07

Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
Distribution and metering system for soil samples
ARC-10429 B71-10481 07
Scale factor gage for fiber optics inspection device
MSC-17361 B71-10496 07
Rising-plate rheometer
ARC-10524 B72-10026 03
Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
Voltage-tunable parallel-T filter for remote operation
NPO-11165 B72-10077 01
Tornado detector and alarm
M-FS-20915 B72-10106 01
Frequency switch keyed oscillator
ARC-10412 B72-10124 01
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Remote control flare stack igniter for combustible gases
M-FS-21675 B72-10352 07
A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07
Electromagnetic rheometer
ARC-10525 B72-10416 04
Patient's breath controls comfort devices
LANGLEY-11138 B72-10533 05
DC motor proportional control system for orthotic devices
M-FS-21573 B72-10617 05
A proposed remote manipulator system: A concept
MSC-14245 B72-10733 06
A proposed hand-tool assembly for robots
M-FS-22266 B73-10216 07
Logic controlled solid state switchgear
LEWIS-12044 B73-10408 02
An automated remote marshland water-sampling station
LANGLEY-11503 B73-10437 04
Eye-controlled "teletypewriter"
LANGLEY-11564 B73-10514 02
Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03
Laser-actuated mechanical device
NPO-13105 B74-10166 03
Remotely operated gas-pressure regulator and shuttle valve
NPO-13201 B74-10298 07
Solid state remote power controllers for 120 VDC power systems
LEWIS-12523 B75-10150 02

REMOTE HANDLING

Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 B71-10044 06
Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03
Advanced action manipulator system (ADAMS)
M-FS-22022 B73-10204 07
A proposed hand-tool assembly for robots
M-FS-22266 B73-10216 07

REMOTE SENSORS

Multi-frequency resonant antenna
HQ-10215 B70-10098 02
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03
Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03
Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
Indexing film with a fluidic sensor
MSC-14117 B72-10501 02
Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03
Assessment of water pollution by airborne measurement of chlorophyll
ARC-10648 B72-10566 04
Remote measurement of the water content of snowpacks
ARC-10651 B72-10567 03
An absentee monitoring device
KSC-10668 B72-10578 01
Metabolic simulation chamber
HQ-10776 B72-10658 05
Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 B72-10665 03
Remote measurements by telephone
LEWIS-11704 B73-10010 02
Limited tactile stimulus for prosthetic hands
M-FS-16570 B73-10078 05
Dye laser remote sensing of marine plankton
LANGLEY-11382 B73-10359 05
Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 B73-10417 03
Time-control system for communication between data-collection and orbiting
GSFC-11182 B74-10088 02
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
Location of vehicles using AM station broadcasting signals
NPO-13217 B74-10300 02
Remote estimation of soil moisture
ARC-10867 B75-10026 03
Data processing large quantities of multispectral information
MSC-14472 B75-10080 03
Voltage monitoring system
KSC-10736 B75-10154 02

SUBJECT INDEX

Multispectral data analysis: LARSYS III
 MSC-14823 B75-10235 03
 Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
 MSC-14866 B75-10236 03
 Monitor for checking electric-field meters
 KSC-10851 B75-10296 02
 Developments in spectrophotometry II: A multiple-frequency particle-size spectrometer
 NPO-13606 B75-10333 03
 Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
 NPO-13614 B75-10335 03

REMOVAL
 Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
 ARC-10567 B72-10419 04
 A concept for universal pliers
 KSC-10768 B72-10685 07
 Electro-chemical grinding
 LANGLEY-10801 B72-10744 08
 Improved photoetching fabrication method
 LEWIS-11268 B72-10745 08
 Condensate-removal device for heat exchangers
 JSC-14143 B73-10429 06
 Tool for installing or extracting small bulbs in limited-access spaces
 LANGLEY-11543 B73-10433 07
 Straight-line IC removal tool
 NPO-13157 B74-10281 01

RENDEZVOUS TRAJECTORIES
 Optimum Multi-Impulse Rendezvous Program
 MSC-13139 B70-10623 06

RENE 41
 Rene 41 heat treatment electron microscopy
 M-FS-18633 B70-10081 04
 Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
 M-FS-18790 B70-10213 04
 Improved welding of Rene-41
 M-FS-18821 B70-10367 08
 Method of joining metals of significantly different expansion rates
 NPO-12076 B71-10028 08
 Refrigerated cutting tools improve machining of superalloys
 LANGLEY-10488 B71-10076 08
 Copper/nickel eutectic brazing of titanium
 ARC-10337 B71-10525 08
 Bonding titanium to Rene 41 alloy
 ARC-10311 B72-10041 08
 Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
 LANGLEY-10930 B72-10339 04

REPEATERS
 A pseudo random-access synchronous meteorological satellite system
 GSFC-10895 B71-10220 02

REPLACING
 Core drill's bit is replaceable without withdrawal of drill stem - A concept
 M-FS-20819 B70-10391 07

Replaceable filters and cones for flared-tubing connectors
 MSC-15750 B70-10548 07
 Limited life item management
 M-FS-24020 B71-10196 06
 Positive fast sealing union connections
 LEWIS-11290 B72-10133 06

REPORT GENERATORS
 TCB operation supply inventory system /TCBSYS/
 GSFC-11306 B71-10314 09
 Manpower management information system /MIS/
 M-FS-21477 B71-10431 09

REPORTS
 A report of advancements in structural dynamic technology resulting from Saturn 5 programs
 LANGLEY-10684 B70-10710 06
 Standardized Pearson type 3 density function area tables
 M-FS-20541 B71-10205 02
 Flat-conductor cable has rotary and linear flexibility
 M-FS-21096 B71-10242 01
 Dynamic response of viscous compressible fluids in rigid tubes
 M-FS-20542 B71-10269 03
 Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
 M-FS-20717 B71-10273 03
 Systems management techniques and problems
 M-FS-21401 B71-10361 01
 Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
 Error evaluation for difference approximations to ordinary differential equations
 M-FS-21610 B71-10423 09
 Theory and application of feedback shift registers
 NPO-11486 B71-10451 02
 Automated preventive maintenance program
 GSFC-11408 B71-10500 09
 Effect of thermal discharges on the mass energy balance of Lake Michigan
 AEC-10013 B72-10004 03
 Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
 M-FS-21113 B72-10321 04
 Acoustic spectral analysis and testing techniques
 NPO-11554 B72-10341 03
 Design criteria monograph for actuators and operators
 LEWIS-12264 B74-10061 06
 Evaluation of test procedures for hydrogen environment embrittlement
 ARC-10919 B74-10222 04
 Design criteria monograph for valve assemblies
 LEWIS-12332 B74-10227 06
 Design criteria monograph on centrifugal flow turbopumps
 LEWIS-12346 B74-10228 06
 Characteristics and performance study of mass spectrometer residual gas analyzers
 LEWIS-12393 B75-10185 03
 Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03

RESEARCH AND DEVELOPMENT

Safety management of a complex R&D ground operating system
 LEWIS-12559 B75-10241 07
 Industrial laser welding: An evaluation
 M-FS-23237 B75-10267 08
 Single crystals of metal solid solutions: A study
 M-FS-23268 B75-10268 03
 A study of accuracy in selected numerical-analysis integration techniques
 MSC-14802 B75-10273 09
 Response of tantalum capacitors to fast transient overvoltages
 MSC-14822 B75-10274 01
 Generation of key in cryptographic system for secure communications
 NPO-13451 B75-10278 09
 Turbine design review text
 LEWIS-12560 B75-10287 06
 The impact of water on free-falling bodies
 M-FS-23310 B75-10311 03
 A flame-resistant modified polystyrene
 MSC-14903 B75-10320 04

REPRESENTATIONS
 Graph for locked rotor current
 MSC-15703 B72-10075 06

REPRODUCTION (COPYING)
 Optically activated magnetic recording tape
 GSFC-10275 B70-10247 01
 Three-dimensional pantograph for use in hazardous environments
 NUC-10222 B70-10567 07
 Dropouts in magnetic tape recording and reproduction
 NPO-11519 B71-10160 03
 Dual field alignment display and control for electron micropattern generator
 M-FS-22118 B72-10646 01

RESCUE OPERATIONS
 Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
 KSC-10522 B70-10680 03
 Remote coupling of air lines
 NUC-10225 B71-10101 07
 Stable, inflatable life raft for high seas rescue operations
 MSC-12393 B71-10167 05
 Cylindrically shaped rope ladder
 M-FS-16319 B72-10688 07
 Scanning beacon locator system: A concept
 JSC-12593 B73-10318 02
 Highly-visible air-sea rescue marker
 MSC-12564 B75-10166 05

RESEARCH
 Proceedings of the Third Southeastern Seminar on Thermal Sciences
 M-FS-20627 B70-10135 03
 Derivation of a general perturbation solution - Its application to determination of orbit
 MSC-13377 B70-10442 03
 The determination of stability domains for nonlinear dynamical systems
 M-FS-14832 B70-10539 03
 Manganese bismuth thin film for large capacity digital memories
 M-FS-21246 B72-10107 03

RESEARCH AND DEVELOPMENT
 Kinetic inductance measured in a superconducting wire
 ERC-10305 B70-10491 03
 Recommended safety guides for industrial laboratories and shops
 SAN-10050 B71-10175 07

RESEARCH MANAGEMENT

SUBJECT INDEX

- MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
Research on bearing lubricants for use in a high vacuum
M-FS-22119 B72-10469 04
- RESEARCH MANAGEMENT**
GREMEX update (Goddard research engineering management exercise)
GSFC-11512 B73-10162 09
- RESERVOIRS**
Hydrophobic liquid/gas separator for heat pipes
ARC-10656 B72-10549 03
- RESIDUAL GAS**
Vacuum leak detector features higher sensitivity
ERC-10034 B70-10493 03
Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 B70-10620 03
Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 B75-10185 03
- RESIDUAL STRESS**
Improved welding of Rene-41
M-FS-18821 B70-10367 08
Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08
Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
Residual stress effects on the impact resistance and strength of fiber composites
LEWIS-11984 B73-10063 04
- RESILIENCE**
Zero-leakage valves
ARC-10506 B72-10024 06
- RESIN BONDING**
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
- RESINS**
Process for synthesizing a new series of fluorocarbon polymers
NPO-10862 B70-10453 04
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
Improved thermal paint formulation
M-FS-14706 B71-10180 03
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
A method of isolating organic compounds present in water
AEC-10010 B72-10044 04
Devolatilization of polymer resins
GSFC-11358 B72-10280 04
An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08
- Self-sterilizing polymers
M-FS-22054 B73-10090 04
Criteria for selecting resin matrices for improved composite strength
LEWIS-12057 B74-10005 04
- RESISTANCE**
Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04
Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Thin film devices used as oxygen partial pressure sensors
XLA-06473 B70-10419 04
Cable insulation cut-through tester
M-FS-20114 B71-10459 08
Piezoelectric relay
GSFC-11627 B74-10089 01
A flame-resistant modified polystyrene
MSC-14903 B75-10320 04
- RESISTANCE HEATING**
Inexpensive system protects megawatt resistance-heating furnace against 'high-voltage' surges
NUC-10239 B71-10043 01
Improved electron emitter
LEWIS-10814 B71-10388 03
Isotropic pyrolytic carbons
ARC-10532 B72-10029 04
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06
A simple, efficient resistance soldering apparatus
GSFC-10913 B72-10649 08
Positive contact resistance soldering unit
KSC-10242 B73-10145 02
- RESISTANCE THERMOMETERS**
Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
Simple non-destructive tests for electroexplosive devices
NPO-11563 B72-10315 01
A compact battery powered digital thermometer
MSC-14084 B72-10545 02
Valve degradation detector
ARC-10850 B74-10117 03
- RESISTORS**
Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
Thermoelectric radiometer
ARC-10138 B70-10056 02
Acoustic vibration test detects intermittent electrical discontinuities
MSC-15158 B70-10118 01
Precision full-wave rectifier
ARC-10101 B70-10161 02
Constant current source for converting absolute temperatures to analog voltages
NPO-10733 B70-10164 02
Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01
Low power NAND gate
M-FS-14487 B70-10203 01
Simplified method for measuring the impedance of RF power sources - A concept
NPO-10734 B70-10212 02
Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
Two terminal current limiter
NPO-11350 B70-10232 01
- Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01
Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
P-I-N diode switch
GSFC-10661 B70-10278 01
Simple, accurate temperature-measuring instrument
MSC-12327 B70-10303 01
Visual device to assist computer program debugging
MSC-15833 B70-10308 09
Two techniques for digital filter design
M-FS-20015 B70-10314 01
Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
A self-tuning filter
ARC-10264 B70-10337 01
Constant-amplitude RC oscillator
ARC-10262 B70-10338 01
Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 B70-10374 09
Dual current readout for precision plating
MSC-15673 B70-10392 01
Load cell for thermionic converter tests
LEWIS-11068 B70-10470 01
A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01
Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 B70-10534 01
Digital input is buffered to real-time analog display
KSC-10397 B70-10562 01
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
Man-machine interactive system simplifies computer-aided circuit design
LANGLEY-10711 B70-10660 09
RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01
High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Design of hysteresis circuits using differential amplifiers
ARC-10070 B71-10162 01
A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02
Electronic ripple indicator
KSC-10162 B71-10170 01
Voltage-controlled oscillator
ARC-10078 B71-10171 01

- Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
- Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
- Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
- Catheter transducer and circuit
ARC-10132 B71-10234 01
- Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 B71-10275 01
- Pressure transducer with four-decade dynamic range
KSC-10384 B71-10323 01
- Nonvolatile read/write memory element - A concept
GSFC-10994 B71-10347 01
- Double phase-lock loop with rapid transient response - A concept
GSFC-10864 B71-10349 01
- Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
- Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 B71-10375 08
- Radiographic inspection specifications for electronic components
M-FS-20723 B71-10438 01
- Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
- Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
- High noise immunity one shot
ARC-10137 B72-10047 01
- Inertial reference unit
NPO-11518 B72-10094 02
- Time-adjusted variable resistor
NPO-11306 B72-10116 01
- Differential input preamplifier
ARC-10489 B72-10165 01
- Driver circuit for inductive loads
ARC-10073 B72-10268 01
- Multipurpose top for liquid helium Dewar
ARC-10533 B72-10302 03
- Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
- Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01
- RESOLUTION**
- Device for printing alphanumeric listings and digital data plots
LEWIS-10954 B70-10002 02
- Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
- Highly stable biased amplifier and stretcher system
ARG-10354 B70-10142 01
- Television camera as a scientific instrument
NPO-11164 B70-10209 03
- Picosecond pulse measurement by two-photon excitation of photographic film
ERC-10227 B70-10377 02
- Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
- Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
- Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03
- Virtual-image display system for flight simulators
ARC-10175 B71-10427 03
- Cloud-free resolution element statistics program
GSFC-11494 B71-10463 09
- Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03
- Solar experiment alignment system
ARC-10471 B72-10020 03
- Low noise electromagnetic flowmeter
M-FS-21291 B72-10108 02
- Conical electromagnetic radiation flux concentrator
M-FS-21613 B72-10147 03
- Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
- Solid state television camera has no imaging tube
M-FS-21553 B72-10254 02
- Hybrid holographic system
M-FS-20074 B72-10260 03
- Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04
- Reduction of quantization error in measurement of frequency
MSC-14649 B74-10191 02
- RESOLVERS**
- Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
- Four-phase differential phase shift resolver
JSC-14065 B73-10093 02
- RESONANCE**
- Improved ultraviolet resonance lamp
ARC-10030 B70-10237 01
- Resonance tube igniter
LEWIS-11219 B70-10618 04
- Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09
- Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
- Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
- Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
- Criteria for vibration testing
GSFC-10737 B71-10266 06
- Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06
- RESONANCE SCATTERING**
- Data from various sources provide standard single-level resonance parameters for uranium 233
NUC-10229 B70-10357 03
- Vacuum leak detector features higher sensitivity
ERC-10034 B70-10493 03
- RESONANCE TESTING**
- Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02
- Fluid dynamics test method
NPO-11895 B74-10211 03
- RESONANT FREQUENCIES**
- A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
- Multi-frequency resonant antenna
HQ-10215 B70-10098 02
- A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
- Improved modified turnstile antenna
MSC-12209 B70-10482 01
- Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
- Adjustable support spring
ARC-10203 B70-10636 07
- Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07
- Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 B71-10297 04
- Error evaluation for difference approximations to ordinary differential equations
M-FS-21610 B71-10423 09
- Improving laser beam coherence - A concept
ARC-10417 B71-10527 03
- Improved audio reproduction system
ARC-10404 B72-10059 01
- Microresonator for damping flow oscillations
M-FS-18401 B72-10105 06
- Frequency switch keyed oscillator
ARC-10412 B72-10124 01
- Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
- A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
- Simple turbine balancing test apparatus
LEWIS-11658 B72-10377 07
- A system for early warning of bearing failure
M-FS-21877 B72-10494 06
- Improved procedures for mass matrix-reductions in eigenvalue solutions
NPO-11619 B73-10384 09
- Flaw detection by mechanical resonant measurement
M-FS-19218 B73-10440 03
- Frequencies and modes for shells of revolution (FAMSOR)
JSC-14497 B73-10444 09
- Variable-volume atomic storage vessel for hydrogen masers
GSFC-11895 B75-10248 03
- RESONANT VIBRATION**
- Microresonator for damping flow oscillations
M-FS-18401 B72-10105 06
- Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
- Flaw detection by mechanical resonant measurement
M-FS-19218 B73-10440 03
- RESONATORS**
- Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06

RESOURCES

Directional coupler for optical waveguides
 ERC-10094 B70-10381 03
 Nondestructive sonic testing of adhesive-bonded composites
 M-FS-20793 B70-10397 08
 Reduction of fan noise: A concept
 ARC-10312 B72-10040 06
 Microresonator for damping flow oscillations
 M-FS-18401 B72-10105 06
 Diatomic infrared gasdynamic laser permits selection of wavelengths
 ARC-10370 B72-10206 03
 Ultrasonic calibration device
 LANGLEY-11435 B73-10420 03
 High q band-pass resonators utilizing composite band-stop resonator pairs
 GSFC-10990 B74-10035 02
 Resonant chambers for suspending materials in air
 NPO-13263 B75-10050 03

RESOURCES

A mathematical model of the effect of a predator on species diversity
 NPO-11230 B70-10006 05

RESPIRATION

Technique for analyzing human respiratory process
 MSC-13436 B70-10528 05
 Biomedical recording system
 MSC-13653 B70-10697 05
 Simple gas chromatographic system for analysis of microbial respiratory gases
 ARC-10403 B72-10207 03
 Counter lung
 ARC-10248 B72-10219 05
 Balanced-bellows spirometer
 XAC-01547 B72-10279 05
 A continuous physiological data collector
 M-FS-20835 B72-10402 05
 Electronic circuit detects left ventricular ejection events in cardiovascular system
 LEWIS-11581 B72-10512 05
 Drive mechanism for production of simulated human breath
 HQ-10777 B72-10659 05
 Temperature and humidity control of simulated human breath
 HQ-10778 B72-10660 05
 Simulated breath waveform control
 HQ-10779 B72-10661 05

RESPIRATORY DISEASES

A continuous physiological data collector
 M-FS-20835 B72-10402 05

RESPIRATORY PHYSIOLOGY

Computer system for monitoring radiorepirometry data
 ARC-10784 B73-10494 05
 Ultrastructural alteration of mouse lung by prolonged exposure to mixtures of helium and oxygen
 ARC-10929 B75-10061 05

RESPIRATORY RATE

Technique for analyzing human respiratory process
 MSC-13436 B70-10528 05
 Metabolic breath analyzer
 M-FS-21415 B71-10466 05
 Mobile automatic metabolic analyzer
 M-FS-23143 B75-10077 05

RESPIROMETERS

Metabolic breath analyzer
 M-FS-21415 B71-10466 05

RESPONSE TIME (COMPUTERS)

Switching circuits with fast response and low power drain
 GSFC-10878 B70-10250 01
 Quick response targeting program
 M-FS-15157 B71-10147 09

RESPONSES

Study of second breakdown in power transistors using infrared techniques
 M-FS-20748 B71-10021 01
 Multiloop distributed RC active networks
 ARC-10200 B71-10177 01
 Peak structural response to nonstationary random excitations
 NPO-11617 B71-10188 06
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Criteria for vibration testing
 GSFC-10737 B71-10266 06
 Data sampling system for monitor and control station
 M-FS-20948 B71-10299 02
 Microwave biasing improves detector response in the infrared region
 GSFC-11050 B71-10313 01
 Viscoelastic cushion for patient support
 MSC-12447 B71-10316 05

RESTORATION

Automatic transmission line monitor
 KSC-10385 B71-10288 02
 Recovery of recordings from heat damaged magnetic tapes
 JSC-14219 B73-10173 02

RESUSCITATION

Breathing-metabolic simulator
 HQ-10766 B72-10657 05
 Metabolic simulation chamber
 HQ-10776 B72-10658 05

RETAINING

Hydraulic expansion process shapes large metal sheets
 MSC-12432 B71-10511 07

RETARDANTS

The deterioration of intermediate moisture foods
 MSC-13827 B71-10332 05
 Wide-field birefringent elements
 MSC-12677 B75-10105 03

RETARDERS (DEVICES)

Compact fluid-flow restrictor
 MSC-15803 B70-10679 07

RETARDING

Electron energy analyzer
 HQ-10373 B70-10138 02

RETENTION

Unified hatch system
 MSC-15813 B71-10095 06
 Low-friction ball-and-socket
 NPO-11348 B72-10081 08

RETICLES

Solar sensor with autocollimator
 ARC-10148 B72-10192 03
 Process for the production of star-tracking reticles
 GSFC-11188 B73-10488 03
 Visual alignment aid
 LANGLEY-11842 B75-10228 03

RETINA

Automatic optometer operates with infrared test pattern
 ARC-10095 B70-10401 05
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 B70-10568 05

SUBJECT INDEX

Pattern recognition technique
 NPO-11337 B71-10187 06
 Cine recording ophthalmoscope
 ARC-10399 B72-10189 05
 Projections of scan patterns on human retina
 ARC-10181 B72-10193 05
 Visual sensitivity tester
 ARC-10329 B72-10203 05

RETINAL IMAGES
 Scanning technique for tracking small eye-movements
 ARC-10488 B72-10220 05

RETRACTABLE EQUIPMENT
 Detection and location of metal fragments in the human body
 M-FS-14797 B70-10107 05
 High-reliability release mechanism
 LEWIS-11233 B71-10080 07
 Low-profile landing-gear assembly
 ARC-10786 B75-10055 06

RETROREFLECTION
 High-accuracy detector for laser radar
 MSC-13275 B70-10570 01
 Radiant energy absorption enhancement in optical imaging systems
 ARC-10194 B71-10112 03

RETROCKET ENGINES
 Optimized braking of landing vehicles with atmospheric drag
 NPO-11402 B72-10084 06

RETROTHRUST
 Optimized braking of landing vehicles with atmospheric drag
 NPO-11402 B72-10084 06

REUSABLE HEAT SHIELDING
 High-temperature, reusable surface insulation system
 MSC-14688 B75-10042 04

REUSE
 Reusable anaerobic system for microbiological studies - A concept
 MSC-13920 B71-10495 05

REVERBERATION
 Digital decorrelator saves time and expense in acoustic testing of structures
 NPO-11542 B71-10157 03
 Response of a panel structure to reverberant acoustic excitation
 M-FS-21774 B72-10603 06

REVERSING
 Improved reversible coulometer cell
 SAN-10051 B71-10176 02

REVISIONS
 FORTRAN 4 digital program changer
 MSC-17567 B71-10448 09

REVOLVING
 Erosion of metals by multiple impacts with water
 HQ-10591 B71-10197 04
 Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
 LEWIS-10788 B71-10392 09
 Vibration characteristics of ring-stiffened orthotropic shells of revolution
 LANGLEY-10989 B71-10535 09
 Misfit and miss-drag programs
 LANGLEY-10932 B72-10153 09
 Dynamic nonlinear analysis of shells of revolution (DYNASOR II)
 JSC-14496 B73-10443 09
 Frequencies and modes for shells of revolution (FAMSOR)
 JSC-14497 B73-10444 09

- Stiffness and mass matrices for shells of revolution (SAMMSOR II)
JSC-14494 B73-10446 09
- REYNOLDS NUMBER**
Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03
Short-duration, transonic flow, variable-porosity test section
M-FS-20509 B70-10256 03
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07
Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
Hydraulic characteristics of flow through miniature slits
NPO-11354 B70-10400 07
Compact electric heater
LEWIS-11172 B70-10677 03
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
Wind tunnel investigations at transonic Mach numbers
M-FS-20895 B71-10254 06
Cryogenic gel flow viscometer
ARC-10523 B72-10180 03
Reduction of noise in gyro outputs
NPO-11603 B72-10743 06
- RHENIUM**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 B70-10233 04
High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
- RHENIUM ALLOYS**
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
- RHEOLOGY**
Proceedings of the Third Southeastern Seminar on Thermal Sciences
M-FS-20627 B70-10135 03
- RHEOMETERS**
Electromagnetic rheometer
ARC-10525 B72-10416 04
- RHODIUM**
High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- RIBBONS**
Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 B71-10168 08
Hot-blade stripper for polyester insulation on FCC
M-FS-20117 B71-10461 08
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
A spiraled niobium tin superconductive ribbon
LEWIS-11726 B73-10044 04
- RIBOSE**
A process yields large quantities of pure ribosome subunits
HQ-10662 B72-10653 05
- RIBS (SUPPORTS)**
Isogrid structure
M-FS-21567 B72-10323 06
Biaxial compression test technique
MSC-14883 B75-10319 08
- RICCATI EQUATION**
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
- RICE**
Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
- RIDGES**
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
- RIFLES**
Economical technique for fragmentation testing
ARC-10792 B74-10052 04
- RIGGING**
Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
- RIGID MOUNTING**
Compression springs used for vibration isolation
NPO-11012 B70-10523 07
- RIGID STRUCTURES**
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
Flexible or rigid extending arm
MSC-13512 B70-10465 07
Separation of two bodies in space
NPO-10663 B70-10625 09
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Structural behavior of tapered inflated fabric cylinders under various loading conditions
MSC-15317 B71-10327 06
Frame modal analysis
MSC-17562 B71-10414 09
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
- RIMS**
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
- RING CURRENTS**
Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
- RING STRUCTURES**
Testing filamentary composites
HQ-10268 B70-10004 04
Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
- Simple technique extends life of angular-contact ball bearings
LEWIS-11117 B70-10535 07
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
Shielding method for polycrystalline and epitaxy growths
M-FS-20162 B71-10434 04
Beam squint correction for a duplex, retrodirective phased array
GSFC-11023 B71-10444 02
Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07
Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07
Inorganic glass ceramic slip rings
M-FS-20711 B72-10313 04
Computer program for transient response of structural rings subjected to fragment impact
LEWIS-11926 B73-10064 09
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
- RINGS**
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
- RINGS (MATHEMATICS)**
Principles of error detection and error correction codes
NPO-11487 B71-10408 02
- RIPPLES**
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Piezoelectric actuator uses sequentially-excited multiple elements: A concept
NPO-11527 B72-10096 01
- RISK**
Generalized safety equation - A concept
M-FS-20522 B71-10183 06
Risk management technique for liquefied natural gas facilities
KSC-11005 B75-10193 04
Safety management of a complex R&D ground operating system
LEWIS-12559 B75-10241 07
- RIVETED JOINTS**
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
- RIVETING**
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
Fatigue of boron-aluminum composites bonds and joints
M-FS-22325 B73-10079 04
- RIVETS**
Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04

- High-strength rivet does not require aging
MSC-19301 B75-10044 06
- ROADS**
Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
- ROASTING**
Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04
High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04
- ROBOTS**
A proposed hand-tool assembly for robots
M-FS-22266 B73-10216 07
- ROCKET ENGINE CASES**
Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
Design criteria monograph for pressurized metal cases
LEWIS-11835 B72-10633 04
- ROCKET ENGINE CONTROL**
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06
- ROCKET ENGINE DESIGN**
Zone radiometer measurements on a model rocket exhaust plume
M-FS-21693 B72-10357 02
Design criteria monograph for pressurized metal cases
LEWIS-11835 B72-10633 04
Design criteria monograph for liquid propellant gas generators
LEWIS-12139 B74-10008 07
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
Regenerative cooling design and analysis computer program
LEWIS-12110 B75-10015 09
Design criteria monograph on turbopump systems
LEWIS-12499 B75-10135 06
- ROCKET ENGINES**
Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
Novel wave generator adaptable to indoor surfing
LEWIS-11096 B70-10563 03
A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Resonance tube igniter
LEWIS-11219 B70-10618 04
Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04
Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09
- An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07
- Digital computer program for analyzing chugging instabilities
LEWIS-11294 B71-10215 09
- Cast segment evaluation
M-FS-21354 B71-10363 08
- Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
- Fluidic pressure regulators
ARC-10474 B72-10162 06
- New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
- Fabrication of cooled, graphite-lined structures
LEWIS-11741 B72-10593 08
- Study of high altitude plume impingement
M-FS-21414 B72-10601 09
- Improved photoetching fabrication method
LEWIS-11268 B72-10745 08
- High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
- Economical technique for fragmentation testing
ARC-10792 B74-10052 04
- Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03
- ROCKET EXHAUST**
Zone radiometer measurements on a model rocket exhaust plume
M-FS-21693 B72-10357 02
Study of high altitude plume impingement
M-FS-21414 B72-10601 09
Rocket plume properties measured in space simulators
NPO-11608 B73-10137 03
- ROCKET FIRING**
Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
- ROCKET LININGS**
Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 B71-10212 08
- ROCKET NOZZLES**
Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
Ultrasonics used for high-precision nondestructive inspection of brazed joints
NUC-10352 B71-10045 08
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
- Fabrication techniques for thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
- A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
- Gas leak-detection system
NPO-11405 B72-10087 03
- Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07
- New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
- ROCKET PROPELLANTS**
A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 B70-10648 01
Mass flow controller for gaseous propellants
JSC-14221 B73-10207 06
- ROCKET TEST FACILITIES**
Prevention of damage to delicate connectors during mounting of heavy engines for testing
NUC-10322 B71-10044 06
- ROCKET THRUST**
Separation of two bodies in space
NPO-10663 B70-10625 09
Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07
- ROCKET VEHICLES**
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
- ROCKET-BORNE INSTRUMENTS**
Rocket borne instrument to measure electric fields inside electrified clouds
KSC-10730 B73-10176 03
- ROCKS**
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
An improved gas extraction furnace
MSC-14138 B72-10544 04
- ROCKWELL HARDNESS**
Lightweight, high speed bearing balls: A concept
LEWIS-11087 B74-10013 06
- RODS**
Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01
Water surface depth instrument
LANGLEY-10576 B70-10103 07
Compression springs used for vibration isolation
NPO-11012 B70-10523 07
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Unified hatch system
MSC-15813 B71-10095 06
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07

SUBJECT INDEX

Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01

Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07

Improving laser beam coherence - A concept
ARC-10417 B71-10527 03

Specimen for high-temperature tensile tests
ARC-10531 B72-10028 04

Squib-actuated disconnect device
NPO-11544 B72-10097 06

Hydraulic valve lifter remover
M-FS-21377 B72-10110 07

Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07

Fabrication of uniaxial filament-reinforced epoxy tubes for structural application
LANGLEY-10203 B72-10340 04

Electromagnetic rheometer
ARC-10525 B72-10416 04

ROLL

Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03

Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01

Inertial reference unit
NPO-11518 B72-10094 02

Roll function in a flight simulator
ARC-10557 B72-10417 02

ROLL FORMING

Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04

Improved diffusion welding and roll welding of titanium alloys
LEWIS-11852 B73-10005 08

Densification of powder metallurgy billets by a roll consolidation technique
LEWIS-11395 B73-10040 08

Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03

ROLLER BEARINGS

Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
LEWIS-10856 B70-10468 07

Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07

Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07

Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04

Carbide factor predicts rolling-element bearing fatigue life
LEWIS-11940 B73-10008 07

Silicon nitride used as a rolling-element bearing material
LEWIS-12447 B75-10134 06

ROLLERS

Improved mechanical remote control assembly - Concept
M-FS-16249 B70-10144 07

Easy manual operation of overhead garage doors - A concept
KSC-10555 B70-10543 07

Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07

Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08

Tubing cutter
NPO-11524 B72-10095 07

A cable stabilizer for outdoor elevators
KSC-10513 B72-10283 07

ROLLING MOMENTS

Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04

ROOFS

Solar power roof shingle
LEWIS-12587 B75-10289 01

ROOM TEMPERATURE

Growing single crystals in silica gel
ERC-10306 B70-10479 02

Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04

Strain gage performance above 1033 K
M-FS-18831 B71-10225 04

Improved epoxy resin for constructing cryogenic filament-wound pressure vessels
LEWIS-11261 B71-10261 04

RF-controlled implantable solid state switch
ARC-10136 B71-10426 01

Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 B72-10318 04

Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04

Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 B72-10346 04

High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04

High field CdS detector for infrared radiation
LANGLEY-11027 B72-10725 04

ROOT-MEAN-SQUARE ERRORS

Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01

Graphical method to predict the dynamic response of FM receivers
KSC-10111 B70-10119 01

ROOTS OF EQUATIONS

Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02

Computer program to determine roots of polynomials by ratio of successive derivatives
LEWIS-11809 B73-10244 09

Zeros of certain cross products of Bessel functions of fractional order
LEWIS-12221 B74-10012 03

ROTARY STABILITY

Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06

Design curves for optimizing stability of herringbone-grooved journal bearings
LEWIS-12442 B75-10063 06

ROTARY WINGS

Gyro spring augmentation system
ARC-10496 B72-10010 06

Twistable mold for helicopter blades
ARC-10682 B72-10432 08

ROTATING DISKS

Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06

New design of hingeless helicopter rotor improves stability
ARC-10807 B75-10132 06

ROTATING BODIES

Controlled release of free-falling test models
NPO-11314 B70-10077 07

Mechanical sieve for screening mineral samples
HQ-10242 B70-10083 04

Manually operated elastomer heat pump
NPO-10677 B70-10270 03

Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08

Flueric-controller pneumatic stepping motor system
LEWIS-11051 B70-10332 02

Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07

Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06

Laser method for finding axis of rotation
ARC-10388 B70-10439 03

Novel wave generator adaptable to indoor surfing
LEWIS-11096 B70-10563 03

Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09

Accurate pointing of tungsten welding electrodes
ARG-10449 B71-10048 08

Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07

Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02

Position indicating, rotating boom
LANGLEY-11202 B72-10066 07

Gravitational gradiometer measures mass changes
M-FS-20814 B72-10140 03

Noncontact torque measurement using stroboscopic techniques
MSC-12282 B72-10332 07

Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01

ROTATING CYLINDERS

Four-way, full-throttling valve concept
MSC-13437 B70-10165 07

Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01

ROTATING DISKS

High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07

Shutter design for stereoscopic camera
MSC-13613 B71-10506 03

Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06

A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04

Automated Shell Theory for Rotating Structures (ASTROS)
M-FS-21970 B73-10115 09

ROTATING ELECTRICAL MACHINES

Prediction of windage power loss in alternators

LEWIS-10939 B71-10074 06

Improved system for measuring speed of rotating machinery

ARC-10413 B72-10179 07

ROTATING GENERATORS

Brushless direct-current motor with stationary armature and field

XGS-05290 B70-10691 02

ROTATING LIQUIDS

Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings

LEWIS-11511 B71-10509 09

ROTATING MIRRORS

Ultrasonics used for high-precision nondestructive inspection of brazed joints

NUC-10352 B71-10045 08

A bi-stable optical device

HQ-10701 B72-10655 03

Wide-field reflective scanning optical systems

JSC-14096 B73-10279 03

ROTATING SHAFTS

Slow-speed drives for miniature devices

NPO-10700 B70-10007 02

Data acquisition from high-speed rotating shafts

LEWIS-10886 B70-10043 01

Mechanical characteristics of the Bossler coupling

HQ-10508 B70-10072 07

Continuously variable voltage-controlled phase shifter

NPO-11129 B70-10073 01

A concept for improving efficiency of multistage centrifugal pumps

LEWIS-10966 B70-10287 07

Hall effect transducer gives electrical output proportional to meter shaft rotation

LANGLEY-10620 B70-10298 01

Low cost lobed bearing

LEWIS-11076 B70-10343 07

Thumb-actuated control device

ARC-10019 B70-10407 01

Dynamic balancing of high-speed rotary machinery

HQ-10486 B70-10433 06

Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds

LEWIS-11152 B71-10173 07

Anti-slipping system improves wire saw performance

MSC-13508 B71-10522 07

Position indicating, rotating boom

LANGLEY-11202 B72-10066 07

A permeable rotating-wheel solvent extractor

LRL-10033 B72-10343 04

New motor shaft angular accelerometer concept

LANGLEY-11030 B73-10119 02

Mechanical planetary compensating drive system

ARC-10462 B73-10497 06

Computer program for calculating critical speeds of rotating shafts

LEWIS-11910 B74-10128 09

ROTATION

Calculation of the inertia tensor and center of gravity of complex bodies

NPO-10827 B70-10158 09

Stability of structural rings under uniformly distributed radial loads

NPO-11396 B70-10236 06

Technique for improving hydrodynamic gyro bearings

M-FS-20764 B70-10301 06

Laser wavelength selector and output coupler

ERC-10248 B70-10507 02

Flexible pivot mount eliminates friction and hysteresis

M-FS-20725 B70-10577 07

Microprogram scheme for automatic recovery from computer error

MSC-13387 B70-10642 09

Vacuum-jacketed rotary joints for pipelines

KSC-10519 B71-10018 07

Pattern recognition technique

NPO-11337 B71-10187 06

Noise diffraction patterns eliminated in coherent optical systems

GSFC-11133 B71-10236 03

Flat-conductor cable has rotary and linear flexibility

M-FS-21096 B71-10242 01

Shutter design for stereoscopic camera

MSC-13613 B71-10506 03

Hexapole magnet field analysis

GSFC-10995 B72-10113 03

Separation of gas mixtures by centrifugation

ARC-10449 B72-10270 03

Joining precipitation-hardened nickel-base alloys by friction welding

LEWIS-11514 B72-10288 08

Rotary shutter mechanism contains optical elements

GSFC-11244 B72-10387 03

ROTOR AERODYNAMICS

Computer program for the design of axial-flow turbines

LEWIS-11029 B70-10669 09

Rotordynamic response analysis program

HQ-10579 B71-10211 09

Method for predicting rotor free-wake positions and the resulting rotor blade airloads

LANGLEY-10674 B73-10239 06

New design of hingeless helicopter rotor improves stability

ARC-10807 B75-10132 06

ROTOR BLADES (TURBOMACHINERY)

Variables in turbine erosion

M-FS-18677 B70-10325 03

Dynamic balancing of high-speed rotary machinery

HQ-10486 B70-10433 06

An investigation of tandem-row, high-head pump inducers

M-FS-21139 B71-10152 07

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines

LEWIS-10788 B71-10392 09

Twistable mold for helicopter blades

ARC-10682 B72-10432 08

Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability

LANGLEY-11068 B72-10749 06

Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding

LEWIS-11490 B74-10124 04

ROTOR SPEED

Critical speed analysis of rotors

LEWIS-11061 B70-10288 06

Dynamic balancing of high-speed rotary machinery

HQ-10486 B70-10433 06

Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds

LEWIS-11152 B71-10173 07

Computer program calculates transonic velocities in turbomachines

LEWIS-10977 B71-10402 09

Computer program for flexible rotor dynamics analysis

LEWIS-12153 B74-10084 09

ROTORS

Hall effect encoding of brushless dc motors

GSFC-10789 B70-10188 01

Critical speed analysis of rotors

LEWIS-11061 B70-10288 06

Low cost lobed bearing

LEWIS-11076 B70-10343 07

Hydrodynamic squeeze-film bearings for gyroscopes

M-FS-20802 B70-10389 07

High-temperature electric stator

LEWIS-10889 B70-10459 01

Drilled ball bearings - An approach to extending bearing fatigue life at high speeds

LEWIS-10856 B70-10468 07

Induction generator produces constant-frequency voltage from variable-speed drive

ERC-10065 B70-10478 02

Brushless direct-current motor with stationary armature and field

XGS-05290 B70-10691 02

Prediction of windage power loss in alternators

LEWIS-10939 B71-10074 06

Fluid slip ring transfers coolant to rotating equipment

MSC-13451 B71-10083 07

Rotordynamic response analysis program

HQ-10579 B71-10211 09

Spin vector control of a spinning space station

M-FS-21333 B71-10296 09

Improved diamond coring bits developed for dry and chip-flush drilling

M-FS-21111 B71-10358 07

Brushless DC motor with dual windings

M-FS-21290 B71-10530 02

Graph for locked rotor current

MSC-15703 B72-10075 06

Piezoelectric actuator uses sequentially-excited multiple elements: A concept

NPO-11527 B72-10096 01

Turbopump radial and axial rotor support system

M-FS-21495 B72-10264 07

Simple turbine balancing test apparatus

LEWIS-11658 B72-10377 07

A brushless dc spin motor for momentum exchange altitude control

M-FS-14952 B72-10448 02

An electric motor with magnetic bearings: A concept

XGS-07805 B73-10304 01

Computer program for flexible rotor dynamics analysis

LEWIS-12153 B74-10084 09

ROVING VEHICLES

Articulated elastic-loop roving vehicles
M-FS-22691 B73-10326 06

RUBBER

Immersed ultrasonic inspection of high
acoustical attenuative structures
MSC-15702 B70-10055 03

Manually operated elastomer heat
pump
NPO-10677 B70-10270 03

Strain gage load measuring device - A
concept
MSC-13385 B70-10326 01

Intumescent coatings as fire retardants
ARC-10099 B70-10450 04

Safe suspension of specimens or clusters
during dynamic testing - A concept
M-FS-15110 B70-10559 07

Locating tube blockage that X-ray cannot
detect
NUC-10386 B71-10129 06

Ultrasonic scanning system for in-place
inspection of brazed-tube joints
M-FS-21166 B71-10227 06

Electrolysis cell functions as water vapor
dehumidifier and oxygen generator
ARC-10316 B71-10231 01

Seating tool for preparing molded-plug
terminations on FCC
M-FS-20123 B71-10417 08

Leaching of nitroso rubber material
removes uncured polymer
MSC-17185 B72-10449 04

Rubber composition compatible with
hydrazine
NPO-11440 B73-10019 04

RUBBER COATINGS

A lightweight, high output soil sampler
NPO-10797 B71-10159 07

Nonflammable potting-encapsulating and
conformal coating compounds
JSC-14164 B73-10102 04

RUBY

Energy levels and transition probability
matrix elements of ruby for maser
applications
NPO-11687 B71-10308 09

Eutectic bonding of sapphire to
sapphire
GSFC-11577 B73-10284 08

Improved masers for X-band and Ku
band
NPO-11437 B73-10293 02

RUBY LASERS

Laser altimeter
M-FS-13691 B70-10196 02

Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02

Multifrequency laser beams for
holographic contouring
ARC-10341 B71-10534 03

LEAPS (Laser electro-optical alignment
pole for surveying)
GSFC-11262 B73-10122 02

Laser energy converted into electric
power
NPO-13308 B73-10353 02

RUN TIME (COMPUTERS)

High-impact dynamic-response analysis
of nonlinear structures
NPO-11716 B71-10134 09

Snap dynamics
M-FS-21531 B72-10265 09

RUNGE-KUTTA METHOD

Post Flight Dynamic Analysis
Simulation
M-FS-15067 B70-10605 09

Fast Mars communication geometry
program
LANGLEY-10658 B71-10002 09

High-impact dynamic-response analysis
of nonlinear structures
NPO-11716 B71-10134 09

Numerical integration of second order
differential equations
M-FS-20536 B71-10186 09

Program to determine radiating,
nonadiabatic, inviscid flow over a blunt
body by the method of integral relations
LANGLEY-11048 B72-10067 09

RUNWAY CONDITIONS

Water surface depth instrument
LANGLEY-10576 B70-10103 07

A new method for measuring slipperiness
of airport runways and other paved
surfaces
LANGLEY-10795 B70-10712 06

RUNWAYS

Laser net - A concept for monitoring
wingtip vortices on runways
M-FS-20857 B71-10360 02

RUPTURING

Use of nonwetttable membranes for water
transfer
LANGLEY-10743 B70-10235 04

Test fixture insures high degree of
accuracy in flexure tests
NUC-10246 B70-10358 07

Simple method for forming thin-wall
pressure vessels
ARC-10511 B72-10025 08

RUTHENIUM COMPOUNDS

Low temperature catalytic ignition of
hydrogen and oxygen
ARC-10492 B72-10127 03

RUTILE

Study of in-situ degradation of thermal
control surfaces
M-FS-20892 B72-10336 04

S**S GLASS**

New structural approach for determining
load carrying capability of filament wound
composite materials
M-FS-15121 B70-10408 06

Evaluation of omniweave reinforcement
for composite fabrication
M-FS-20946 B71-10245 04

S WAVES

Ultrasonic detection of flaws in fusion
butt welds
M-FS-20824 B70-10514 08

Probe for measuring turbulent real-time
shear-stress waves
ARC-10755 B74-10072 03

SAFETY

Investigation of the reactivity of organic
materials in liquid oxygen
M-FS-20576 B70-10285 04

Hoop restraint on beam-column behavior
in a stiffened cylindrical shell
M-FS-16172 B70-10394 06

Standards for material handling and
facilities equipment proofload testing
MSC-15788 B70-10526 07

Generalized safety equation - A
concept
M-FS-20522 B71-10183 06

Analytical procedure for estimating
reliability of randomly excited structures
NPO-11618 B71-10189 06

Limited life item management
M-FS-24020 B71-10196 06

Estimating carbon monoxide exposure
MSC-17211 B71-10319 04

New method speeds body inert gas
saturation and utilizes surface
decompression
MSC-13543 B71-10330 05

Optimized techniques and requirements
for computer improvement of structural
weld radiographs
M-FS-21627 B71-10492 09

Standard environmental testing
practices
NPO-11567 B72-10101 02

New meter probes provide protection
from high current power sources at
potentials up to 600 volts
LANGLEY-10804 B72-10455 01

Radiological control manual
M-FS-22092 B72-10460 03

Cylindrically shaped rope ladder
M-FS-16319 B72-10688 07

Integral aircraft passenger seat
ARC-10799 B73-10495 05

Directory of aerospace safety specialized
information sources
LEWIS-12223 B74-10019 03

Laser system to detonate explosive
devices
NPO-11743 B74-10194 03

Nondestructive testing of railroad wheels
and rails by ultrasonics
M-FS-23086 B74-10238 06

Powered fire nozzle for fast penetration
of structures: A concept
MSC-19528 B75-10111 06

SAFETY DEVICES

Magnetic gear backup
MSC-13408 B70-10087 07

Umbilical disconnect actuator
NPO-11202 B70-10170 07

Hydraulic brake safety valve
M-FS-16444 B70-10207 07

Inexpensive tamper proof safety relief
valve
KSC-10470 B70-10320 07

Safe/armed explosive squib
XLA-10372 B70-10328 01

Foolproof quick-release locking pin
M-FS-18495 B70-10409 07

Metal detector system
ARC-10265 B70-10511 01

Connector locking device
KSC-10537 B70-10553 01

Prevention of damage to delicate
connectors during mounting of heavy
engines for testing
NUC-10322 B71-10044 06

Pressurized suits can be fabricated with
adjustable dimensions
MSC-12398 B71-10092 05

Unified hatch system
MSC-15813 B71-10095 06

Recommended safety guides for
industrial laboratories and shops
SAN-10050 B71-10175 07

Aircraft-crash-locating transmitter
features design improvements
M-FS-16609 B71-10213 02

Peak acceleration limiter
NPO-10556 B72-10007 01

High voltage protection network
ARC-10197 B72-10119 02

SAFETY FACTORS

Radioisotope thermionic power supply for spacecraft
 ARC-10438 B72-10212 03
 Stem clutch for motor driven valve
 LRL-10032 B72-10345 07
 Combination pressure regulator and safety valve: A Concept
 MSC-14088 B72-10446 06
 Flexible shielding system for radiation protection
 LRL-10028 B72-10500 03
 A four-panel enclosure protects from explosion
 M-FS-21847 B72-10613 06
 Quick-donning backpack harness
 LANGLEY-10102 B72-10641 05
 An efficient prebreathing apparatus for humans during decompression
 MSC-14151 B72-10690 05
 Seat belt restraint system
 ARC-10519 B72-10692 06
 Waveguide switch protector
 NPO-11592 B72-10705 01
 Brake wear warning device: A concept
 JSC-19157 B73-10123 02
 Electroshock protection circuit
 JSC-14222 B73-10261 02
 Pressurized lighting system
 KSC-10644 B73-10280 02
 Thermally actuated valve
 NPO-11846 B73-10347 06
 Safe electrical receptacle and modified plug
 KSC-10817 B73-10366 01
 Fail-safe fire detection system
 LEWIS-12238 B74-10078 02
 Pocket-size microwave radiation hazard detector
 NPO-11461 B74-10097 02
 Short-range laser obstacle detector
 NPO-11856 B74-10101 03
 Bio-isolated DC operational amplifier
 ARC-10596 B74-10112 01
 Lightweight protective clothing for the safe handling of high-intensity pressurized lamps
 LEWIS-12073 B75-10007 04
 Simple and effective method to lock buoy position to ocean currents
 M-FS-23140 B75-10095 06
 Highly-visible air-sea rescue marker
 MSC-12564 B75-10166 05
 Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
 LANGLEY-11897 B75-10264 06

SAFETY FACTORS

Detonation hazards with "safe" industrial solvents
 LANGLEY-10299 B70-10404 04
 Reliability Analysis Model
 M-FS-14513 B70-10614 09
 Multimode ergometer system
 M-FS-21044 B71-10107 05
 Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06
 Technical management techniques for identification and control of industrial safety and pollution hazards
 M-FS-21883 B72-10588 05

SAFETY MANAGEMENT

A four-panel enclosure protects from explosion
 M-FS-21847 B72-10613 06

Risk management technique for liquefied natural gas facilities
 KSC-11005 B75-10193 04
 Safety management of a complex R&D ground operating system
 LEWIS-12559 B75-10241 07

SAILS

Amplifying ribbon extensometer
 LANGLEY-11825 B75-10300 06

SALINITY

Thermally induced oscillations in fluid flow
 M-FS-20449 B70-10299 03
 Water purification by reverse osmosis using heterocyclic polymer membranes
 LANGLEY-10514 B72-10230 04

SALIVA

Bacterial adenosine triphosphate as a measure of urinary tract infection
 GSFC-11092 B71-10051 05

SALT BATHS

Testing of brazed and welded connections of stainless-steel tubing
 M-FS-20806 B70-10417 08
 Protective coating for salt-bath brazing
 LEWIS-90255 B71-10381 08

SALT SPRAY TESTS

Flexible protection for metal bellows
 KSC-10520 B70-10350 06

SALTS

Purification of contaminated water by filtration through porous glass
 ARC-10655 B72-10412 04
 High strength high modulus ceramic fiber
 M-FS-21266 B72-10592 04

SAMARIUM

Readily fiberizable glasses having a high modulus of elasticity
 HQ-10593 B70-10432 04
 Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
 LEWIS-11610 B73-10206 03

SAMPLERS

A long-lived precision switch actuator for controlling pump-piston action
 NPO-10757 B70-10279 07
 Toroidal mirrors provide virtual walls for breaks in light pipes
 ARC-10031 B70-10632 03
 A lightweight, high output soil sampler
 NPO-10797 B71-10159 07
 Digital parallel-to-series pulse-train converter
 MSC-12417 B71-10450 01
 Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01
 Gas chromatograph sample-transfer valve
 ARC-10427 B71-10474 04
 Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 B71-10475 05
 Distribution and metering system for soil samples
 ARC-10429 B71-10481 07
 Microorganism sample device
 LANGLEY-10258 B71-10487 05
 Microbiological surface sampling cart
 LANGLEY-11069 B72-10395 05
 An automated remote marshland water-sampling station
 LANGLEY-11503 B73-10437 04

Radio-controlled, sound-operated switch
 LANGLEY-11641 B74-10143 03
 Remote sunfall monitor: A concept
 M-FS-22943 B74-10149 03
 Automated mass spectrometer/analysis system: A concept
 NPO-13572 B75-10331 05

SAMPLES

Automatic amino acid analyzer
 ARC-10215 B71-10165 04
 Statistical analysis tables for truncated or censored samples
 M-FS-21024 B71-10351 03
 Third order digital-to-analog converter
 MSC-12458 B72-10030 02

SAMPLING

High-resolution spectral analysis
 NPO-10748 B70-10039 01
 Economic gas chromatograph system for subambient pressure gas sampling
 M-FS-16298 B70-10220 02
 Improved antenna pattern recorder provides visual display of RF power
 M-FS-20447 B70-10230 09
 Elimination of redundancy in telemetered data
 HQ-10585 B70-10431 06
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05
 An improved telemetry system
 ARC-10336 B71-10201 01
 Automatic transmission line monitor
 KSC-10385 B71-10288 02
 Data sampling system for monitor and control station
 M-FS-20948 B71-10299 02
 Rapid method for sampling metals for materials identification
 MSC-17332 B71-10320 04
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04
 High efficiency telemetry method
 NPO-10388 B71-10371 02
 Television multiplexing system
 KSC-10654 B71-10391 02
 Error evaluation for difference approximations to ordinary differential equations
 M-FS-21610 B71-10423 09
 Microbiological surface sampling cart
 LANGLEY-11069 B72-10395 05
 Improved sampling of compressed gases for condensable hydrocarbon content
 KSC-10304 B72-10540 06
 Flexible format, computer accessed telemetry system
 NPO-11358 B73-10290 02
 Gas chromatography of volatile organic compounds
 JSC-14428 B73-10406 04
 An automated remote marshland water-sampling station
 LANGLEY-11503 B73-10437 04
 Biodetection grinder
 M-FS-22833 B73-10474 05
 Extendible probe for atmosphere sampling
 ARC-10829 B74-10054 03
 Liquid sample processor
 NPO-13136 B74-10278 05

SANDS

Molding procedure for casting a variety of alloys
 ARC-10358 B70-10512 08

SUBJECT INDEX

- Gage for measuring coastal erosion and sedimentation
 LANGLEY-10779 B70-10629 01
- SANDWICH STRUCTURES**
 Unidirectional composite stiffening
 HQ-10266 B70-10054 04
 Diffusion technique for lithium-doped silicon
 GSFC-10827 B70-10148 01
 Fabricating subscale components for application to full-scale parts
 M-FS-20805 B70-10390 07
 Nondestructive testing for braze voids in thin panels by use of special coatings
 LANGLEY-10486 B72-10374 08
 Regenerable metallic oxide systems for removal of carbon dioxide: A concept
 ARC-10570 B72-10420 04
 Thin-film ultraviolet detector and spectrometer
 NPO-11432 B72-10701 03
 Lightweight graphite/polyimide panels
 JSC-14375 B73-10121 04
 Manufacture of large, lightweight parabolic antennas
 ARC-10741 B73-10375 08
 Strain arrestor plate for mounting rigid insulating tiles
 JSC-14182 B73-10465 06
 Criteria for selecting resin matrices for improved composite strength
 LEWIS-12057 B74-10005 04
 Soft, thermally conductive material
 LANGLEY-10850 B74-10132 04
 Laminating cored, stressed-face, sandwich structures
 XLA-11028 B74-10233 06
 Advanced fiber-composite hybrids--A new structural material
 LEWIS-12118 B74-10247 04
- SANITATION**
 Domestic wash water reclamation
 LANGLEY-11606 B74-10177 04
 Environmental control and waste management system design concept
 LANGLEY-11588 B74-10235 06
- SAPPHIRE**
 Surface treatment for valve seats
 NPO-10779 B70-10202 08
 Biaxial prestressing of brittle materials
 M-FS-20272 B70-10316 04
 Growth of single-crystal gallium nitride
 ERC-10301 B70-10473 03
 Optical enhancement of photomultiplier sensitivity
 ARC-10213 B71-10113 03
 Multifrequency laser beams for holographic contouring
 ARC-10341 B71-10534 03
 Increasing the response of PIN photodiodes to the ultraviolet
 ARC-10274 B72-10053 03
 Gate protective device for SOS array
 HQ-10745 B72-10755 01
 Eutectic bonding of sapphire to sapphire
 GSFC-11577 B73-10284 08
 Silicon on sapphire for ion implantation studies
 LANGLEY-11415 B73-10522 04
 Increasing terminal strip efficiency at cryogenic temperatures
 M-FS-23234 B75-10266 03
- SATELLITE ANTENNAS**
 Lightweight S-band helix antenna
 KSC-10392 B70-10538 02
- SATELLITE ATTITUDE CONTROL**
 Wide angle solar sensor
 NPO-11341 B72-10080 01
 Gas leak-detection system
 NPO-11405 B72-10087 03
- SATELLITE CONFIGURATIONS**
 Radiation diffraction calculation program /DIFF2/
 GSFC-11422 B71-10462 09
- SATELLITE INSTRUMENTS**
 Digital aspect clock
 ARC-10088 B71-10440 02
- SATELLITE OBSERVATION**
 Digital aspect clock
 ARC-10088 B71-10440 02
- SATELLITE ORBITS**
 Derivation of a general perturbation solution - Its application to determination of orbit
 MSC-13377 B70-10442 03
 Orbit, reentry, and landing attachment for globes
 LANGLEY-10626 B70-10656 03
- SATELLITE ORIENTATION**
 Wide angle solar sensor
 NPO-11341 B72-10080 01
 Solar aspect determination system
 GSFC-11444 B73-10129 02
- SATELLITE TRANSMISSION**
 A pseudo random-access synchronous meteorological satellite system
 GSFC-10895 B71-10220 02
- SATELLITES**
 Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03
- SATURABLE REACTORS**
 Efficient/reliable dc-to-dc inverter circuit
 XGS-06226 B70-10425 01
 Saturable-reactor motor starter reduces line voltage fluctuations
 M-FS-18921 B71-10013 01
- SATURATION**
 Saturation current spikes eliminated in saturable core transformers
 ERC-10125 B71-10142 01
- SATURN PROJECT**
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
- SATURN S-1C STAGE**
 Post Flight Dynamic Analysis
 Simulation
 M-FS-15067 B70-10605 09
- SATURN S-2 STAGE**
 Saturn S-2 base environment for flight evaluation
 M-FS-16597 B70-10555 09
- SATURN 5 LAUNCH VEHICLES**
 Post Flight Dynamic Analysis
 Simulation
 M-FS-15067 B70-10605 09
 A report of advancements in structural dynamic technology resulting from Saturn 5 programs
 LANGLEY-10684 B70-10710 06
 Accumulative weights program
 M-FS-15066 B71-10181 09
 Program to determine space vehicle response to wind turbulence
 M-FS-21614 B72-10410 09
 Welding high-strength aluminum alloys
 M-FS-22918 B73-10481 04
- SAWS**
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
- Anti-slipping system improves wire saw performance
 MSC-13508 B71-10522 07
 Cutting thin sections of bone
 ARC-10555 B72-10303 05
 A tool for cutting ultra thin slits in metals
 KSC-10770 B72-10433 07
- SAWTOOTH WAVEFORMS**
 Contourograph display system for monitoring electrocardiograms
 MSC-13407 B70-10030 05
 Waveform simulator synthesizes complex functions
 NPO-10251 B70-10128 02
- SCALE (RATIO)**
 Information quality-control model
 NPO-11431 B71-10281 06
 Low cost, logarithmic mass flow computer
 LEWIS-11001 B71-10407 06
 Scale factor gage for fiber optics inspection device
 MSC-17361 B71-10496 07
 Trimetric scale for drafting machines
 MSC-15829 B75-10172 09
- SCALE MODELS**
 Fabricating subscale components for application to full-scale parts
 M-FS-20805 B70-10390 07
 A report of advancements in structural dynamic technology resulting from Saturn 5 programs
 LANGLEY-10684 B70-10710 06
 Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 B71-10247 08
 Thermal scale modeling
 M-FS-21268 B71-10432 03
 Thermal-dynamic modeling study
 LANGLEY-11309 B73-10076 06
 Three-dimensional models aid visualization of engineering drawings
 NPO-13394 B75-10179 08
- SCALERS**
 Microbalance accurately measures extremely small masses
 HQ-09962 B70-10607 01
- SCALING**
 Wind tunnel buffet load measuring technique
 ARC-10495 B72-10022 06
- SCALING LAWS**
 Thermal-dynamic modeling study
 LANGLEY-11309 B73-10076 06
- SCANDIUM OXIDES**
 Fabrication of large ceramic electrolyte disks
 ARC-10320 B72-10202 03
- SCANNERS**
 Immersed ultrasonic inspection of high acoustical attenuative structures
 MSC-15702 B70-10055 03
 Noncontacting-optical-strain device
 NPO-10778 B70-10292 03
 A battery simulator
 KSC-10172 B70-10340 01
 Phase interpolation circuits using frequency multiplication for phased arrays
 ERC-10285 B70-10457 02
 Design and development of a fast scan infrared detection and measurement instrument
 M-FS-20749 B71-10022 03

- Economical phased-array antenna for environmental applications
HQ-10434 B71-10057 02
- Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
- Solar cell power scanner
LEWIS-11280 B71-10223 02
- Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
- Phase locking of field sequential color wheel for small TV camera
MSC-13857 B71-10326 02
- Planet geometric center tracker
ARC-10084 B71-10445 02
- Eye point-of-regard system
ARC-10360 B71-10476 05
- Optical device for producing color line scan display from monochrome oscilloscope traces
LANGLEY-10896 B72-10375 03
- Improved optical filters for automated visual inspection
HQ-10720 B72-10521 03
- Film handling system for laser scanner/recorder
MSC-14121 B72-10539 07
- SCANNING**
- Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
- A proposed laser measurement system for determining surface contour
HQ-10326 B70-10263 02
- High speed television camera system processes photographic film data for digital computer analysis
NPO-10745 B70-10282 02
- Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03
- Concept for high speed computer printer
KSC-10373 B70-10484 09
- Electronic scanning of 2-channel monopulse patterns
GSFC-10299 B70-10485 02
- New filter technique improves home television reception
MSC-13729 B71-10141 02
- Automatic transmission line monitor
KSC-10385 B71-10288 02
- Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 B71-10492 09
- Scanning technique for tracking small eye-movements
ARC-10488 B72-10220 05
- Magnetometer with miniature transducer and automatic transducer scanning apparatus
LANGLEY-11617 B74-10142 02
- Closed-circuit television welding-electrode guidance system
M-FS-23026 B74-10150 02
- Amplitude-steered, pseudophased antenna array
GSFC-11446 B74-10255 01
- Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
- Laser scanned image sensors using photoconductors with deep traps
NPO-13131 B75-10112 03
- Microcircuit testing and fabrication, using scanning electron microscopes
M-FS-23159 B75-10304 01
- SCARFING**
- Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08
- SCATTERING**
- Laser Doppler instrument measures fluid velocity without reference beam
XAC-10770 B71-10120 03
- Vibration detection using lasers
ARC-10389 B71-10145 03
- Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
- Computer program optimizes design of nuclear radiation shields
LEWIS-10998 B71-10400 09
- A Compton scatter attenuation gamma ray spectrometer
M-FS-21441 B72-10487 03
- Chemical-ionization visible and ultraviolet gas lasers: A concept
NPO-13289 B75-10115 03
- SCATTERING CROSS SECTIONS**
- Data from various sources provide standard single-level resonance parameters for uranium 233
NUC-10229 B70-10357 03
- Vacuum leak detector features higher sensitivity
ERC-10034 B70-10493 03
- Measurement of X-ray scattering by optical surfaces
GSFC-11590 B73-10283 03
- SCHEDULES**
- MAPS - a computerized management analysis and planning system
LEWIS-11349 B71-10321 09
- SCHEDULING**
- PERT "C"
M-FS-20164 B70-10184 09
- DSIF station schedules
NPO-11547 B71-10243 09
- Program audit, A management tool
KSC-10557 B71-10380 01
- Automated preventive maintenance program
GSFC-11408 B71-10500 09
- System/360 Computer Assisted Network Scheduling (CANS) System
GSFC-10909 B72-10599 09
- SCHLIEREN PHOTOGRAPHY**
- Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
- SCHMIDT CAMERAS**
- Virtual-image display system for flight simulators
ARC-10175 B71-10427 03
- SCHOOLS**
- Instruction manuals for radiographic nondestructive testing
M-FS-21350 B71-10156 06
- SCINTILLATION**
- Signal conditioner circuit for photomultiplier tube
XLA-10773 B70-10096 01
- SCINTILLATION COUNTERS**
- Neutron-image intensifier
ARG-10249 B70-10240 03
- Circuit modification aids in atomic particle discrimination
LEWIS-11155 B70-10689 01
- Scintillation detector for carbon-14
ARC-10378 B71-10144 03
- SCOOPS**
- Gas turbine combustor insensitive to compressor outlet distortion
LEWIS-10286 B70-10312 07
- SCORING**
- Laser scribing of silicon wafers
ERC-10386 B70-10437 01
- Lubricant selection for gear designers
LEWIS-11483 B72-10136 04
- SCRAP**
- Ferrofluid separator for nonferrous scrap separation
LANGLEY-11523 B73-10463 07
- SCREENS**
- Mechanical sieve for screening mineral samples
HQ-10242 B70-10083 04
- Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08
- SCREW DISLOCATIONS**
- Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04
- SCREWS**
- A long-lived precision switch actuator for controlling pump-piston action
NPO-10757 B70-10279 07
- Electrical test wire attachment device
KSC-10562 B70-10488 01
- Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
- Absolute focus lock for microscopes
LANGLEY-10184 B70-10728 07
- Spool for releasing and retracting flat conductor cable
M-FS-20234 B71-10416 08
- Tool expedites installation of BNC connectors
ARC-10327 B71-10480 07
- Electrical grounding bracket
ARC-10041 B72-10045 01
- Redundant screwjack
JSC-19200 B73-10070 07
- SCRUBBERS**
- Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04
- Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- SDS 930 COMPUTER**
- Communications link for SDS 900 series computers
NPO-11161 B70-10163 02
- SEA ROUGHNESS**
- Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
- SEA STATES**
- Application of monochromatic ocean wave forecasts to prediction of wave-induced currents
LANGLEY-11809 B75-10226 03
- SEA URCHINS**
- Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 B75-10282 06

SEA WATER

Elimination of gases and contamination from water
KSC-10502 B70-10456 05

SEALERS

Improved ultraviolet resonance lamp
ARC-10030 B70-10237 01
Preparation of highly fluorinated diols containing ether linkages.
NPO-10768 B70-10353 04
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
Preparation of highly fluorinated polyurethanes
NPO-10767 B71-10005 04
Vacuum-jacketed rotary joints for pipelines
KSC-10519 B71-10018 07
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Zero-leakage valves
ARC-10506 B72-10024 06
Pressure-probe assembly for wind tunnels
ARC-10569 B72-10248 03
Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04
A new vibration dampening adhesive
MSC-17668 B72-10284 04
Synthesis of temperature and solvent-resistant polymers
M-FS-20848 B72-10342 04
Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04
Vacuum-stripped silicone binder for thermal-control paint
M-FS-21397 B73-10060 04
A new intermediate for the production of flexible stable polymers
M-FS-22355 B73-10080 04
Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04

SEALING

Economical weatherproof helical antenna
XKS-08485 B70-10016 01
Salvaging surface-damaged aluminum castings
M-FS-18789 B70-10120 08
Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08
Improved reinforcement for openings in difficult fabrics
MSC-13554 B70-10489 08
Improved burst disk/cutter assembly
KSC-10516 B70-10583 07
Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04
Advances in electrometer vacuum tube design
GSFC-10729 B70-10696 01

Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Fluid slip ring transfers coolant to rotating equipment
MSC-13451 B71-10083 07
Unified hatch system
MSC-15813 B71-10095 06
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
Reduction of valve leakage - A concept
NPO-12003 B71-10315 07
Liquid-hydrogen/nuclear-radiation ant seals
M-FS-21364 B71-10340 03
Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03
Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
Glass tube splitting tool
MSC-17183 B71-10516 07
Glass technology involved in the manufacture of magnetometer components
GSFC-11283 B72-10132 03
Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
LANGLEY-11589 B74-10263 08

SEALS (STOPPERS)

Vibration damping of mechanical seals
M-FS-14160 B70-10068 07
Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
Investigation of positive shaft seals
M-FS-18589 B70-10176 07
Self-lubricating fluorine shaft seal material
HQ-10112 B70-10222 04
Self-sealing propellant-actuated device eliminates atmosphere contamination
NPO-11013 B70-10248 07
An explosion-proof battery case
MSC-12335 B70-10304 01
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
Flat conductor cable connector with contact separation seal
M-FS-20757 B70-10387 01
Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 B70-10653 07
Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
Remote coupling of air lines
NUC-10225 B71-10101 07
Metal-to-ceramic seals - A literature survey
NPO-11430 B71-10116 08
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 B71-10291 04

Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 B71-10355 05
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Reusable anaerobic system for microbiological studies - A concept
MSC-13920 B71-10495 05
Hermetic isolation valves
ARC-10505 B72-10013 06
Micro regulating ball valve
ARC-10295 B72-10121 06
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
High-temperature ceramic-to-ceramic seals
ARC-10319 B72-10199 04
Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07
Inorganic glass ceramic slip rings
M-FS-20711 B72-10313 04
High-volume pressure relief valve
KSC-10707 B72-10536 07
Low-closing-force seal
ARC-10775 B73-10380 06
Poppet valve tester
LEWIS-11655 B73-10415 07
Container seal for dusty environment
LANGLEY-10962 B73-10416 07
Improved circumferential shaft seal
LEWIS-11873 B74-10062 07
Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
Design criteria monograph on transmission seals
LEWIS-12403 B75-10011 07
Compressible flow computer program for gas film seals
LEWIS-12286 B75-10020 09
Regulator for intravenous feeding
ARC-10758 B75-10083 05

SEAMS (JOINTS)

Improved heat-resistant garments
MSC-12109 B70-10544 08
Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06

SEAT BELTS

Metal-shearing energy absorber
HQ-10638 B71-10503 07
Seat belt restraint system
ARC-10519 B72-10692 06

SEATS

High mobility work station restraint support
MSC-12419 B71-10301-07
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08
Micro regulating ball valve
ARC-10295 B72-10121 06
Integral aircraft passenger seat
ARC-10799 B73-10495 05

SECONDARY EMISSION

An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03

SECONDARY FLOW

- Variables in turbine erosion
M-FS-18677 B70-10325 03
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06

SECURITY

- Video switcher for coupling video cameras to single TV monitor
KSC-10782 B75-10192 02
Generation of key in cryptographic system for secure communications
NPO-13451 B75-10278 09

SEDIMENTS

- Gage for measuring coastal erosion and sedimentation
LANGLEY-10779 B70-10629 01
A lightweight, high output soil sampler
NPO-10797 B71-10159 07
Phosphorus in land-water systems
AEC-10049 B72-10429 05
Miniature sonar fish tag
LANGLEY-11814 B75-10092 02

SEEBECK EFFECT

- Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
Compensation of voltage drops in solid-state switches used with thermoelectric generators
NPO-11388 B72-10138 01
Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 B72-10318 04
Apparatus for measuring electrical properties of materials
NPO-11749 B73-10025 03

SEGMENTS

- Cast segment evaluation
M-FS-21354 B71-10363 08
Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06

SEISMIC WAVES

- Intruder detection system
ARC-10097 B70-10638 02
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03

SEISMOGRAPHS

- Intruder detection system
ARC-10097 B70-10638 02

SEISMOLOGY

- Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01

SELECTION

- Information retrieval system
HQ-10426 B70-10556 09
Screening method improves performance of nickel-cadmium batteries
GSFC-11260 B71-10411 04

SELECTORS

- Automatic PCM guard-band selector and calibrator
KSC-10812 B73-10510 02

SELENIDES

- Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
Magnetometer uses bismuth-selenide
LEWIS-11632 B72-10629 03

SELENIUM

- P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01

SELENIUM COMPOUNDS

- Vapor phase growth of group 3, 4, and 5 compounds by HCl transport of elements
LANGLEY-11144 B73-10056 04

SELF ADAPTIVE CONTROL SYSTEMS

- The use of the chatter mode in self-adaptive systems
HQ-10159 B70-10274 06
Fuel-cell heat and mass plate
M-FS-21318 B73-10489 07
Fail-safe fire detection system
LEWIS-12238 B74-10078 02
Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
LANGLEY-11897 B75-10264 06

SELF ALIGNMENT

- Self-adjusting assembly jig
LEWIS-12034 B73-10250 07

SELF ERECTING DEVICES

- Self-deploying boom
GSFC-10566 B72-10574 07

SELF FOCUSING

- Automatically-focusing microscope system for live tissue observation
NPO-13215 B75-10048 03

SELF LUBRICATING MATERIALS

- Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

SELF LUBRICATION

- Potentiometer, constant tension and lubrication device
KSC-10723 B72-10541 02
Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06

SELF ORGANIZING SYSTEMS

- FORTTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09

SELF OSCILLATION

- High-energy lasers by using distributed reflection: A concept
NPO-13346 B75-10118 03
Laser action generated within a light pipe: A concept
NPO-13531 B75-10127 03

SELF SEALING

- Self-sealing, easily purged quick-disconnect hose coupling
MSC-17009 B70-10699 07
Fill and vent quick disconnect
M-FS-21822 B72-10645 07

SEMICONDUCTING FILMS

- Gate protective device for insulated gate field-effect transistors
M-FS-21626 B72-10149 01
Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
Proposed semiconductor film improvement
HQ-10685 B72-10438 04

SEMICONDUCTOR DEVICES

- Solid state switch provides high input-to-output isolation
HQ-10488 B70-10022 01
Improved silicon solar cells
LEWIS-10964 B70-10029 01
New transverse piezoresistance and pinch effect electromechanical transducers - A concept
ERC-10088 B70-10075 01

Determination of diffusion lengths in silicon by an X-ray method

- LEWIS-10984 B70-10150 01
Inorganic bonding of semiconductor strain gages

- GSFC-10833 B70-10215 08
Brushless direct-current motors

- NPO-11351 B70-10234 02
Power semiconductor device with negative thermal feedback

- HQ-10577 B70-10262 01
Laser scribing of silicon wafers

- ERC-10386 B70-10437 01
Multiport semiconductor devices

- ERC-10293 B70-10448 01
Fabrication of electroacoustic RF amplifiers

- ERC-10266 B70-10460 01
New method for photoresist stripping

- ERC-10239 B70-10497 04
Dual-wavelength system monitors deposition of films - A concept

- M-FS-20675 B70-10658 03
High intensity heat-pulse source operates without cooling system

- ARC-10178 B70-10694 03
Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study

- M-FS-20476 B71-10016 01
Design and development of a fast scan infrared detection and measurement instrument

- M-FS-20749 B71-10022 03
High current compensation network for dc logarithmic amplifiers

- NUC-10148 B71-10128 01
Isolated-line commutator-amplifier

- M-FS-20734 B71-10148 02
Low-temperature bonding of temperature-resistant electronic connections

- M-FS-20909 B71-10253 08
Environmental effects on silicon solar cells

- NPO-11475 B71-10282 02
Oxygen pressure control for electrolysis cells

- ARC-10250 B72-10074 02
Compensation of voltage drops in solid-state switches used with thermoelectric generators

- NPO-11388 B72-10138 01
Simple dynamic electromagnetic radiation detector

- LEWIS-11159 B72-10227 03
Proposed semiconductor film improvement

- HQ-10685 B72-10438 04
A Compton scatter attenuation gamma ray spectrometer

- M-FS-21441 B72-10487 03
An approach to real-time process control of semiconductor wire-bonding

- M-FS-21558 B72-10644 08
High temperature gallium phosphide rectifiers

- LEWIS-11804 B72-10673 01
Insulated-gate field-effect transistor strain sensor

- LANGLEY-11012 B72-10731 01
Wideband wattmeter for instant measurement of real power

- LEWIS-11698 B72-10737 01
Glass encapsulation provides extra protection for IC semiconductor devices

- M-FS-21310 B73-10054 01

- Thin film thermoelectric devices as thermal control coatings: A study
M-FS-21384 B73-10153 04
- An improved method for obtaining a normalized junction temperature for semiconductors: A concept
JSC-14136 B73-10196 01
- Laser scanner for testing semiconductor chips
M-FS-22693 B73-10327 02
- Welded printed circuit (pc) stick
GSFC-11773 B73-10393 01
- Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
- Calorimetric detection of neutral-atom content of ion beam
LANGLEY-11505 B74-10184 03
- JPL transient radiation analysis by computer program (JTRAC)
NPO-13470 B75-10053 09
- Sputtered gold mask for deep chemical etching of silicon
LANGLEY-11661 B75-10089 08
- High-performance Schottky diodes endure high temperatures
M-FS-23184 B75-10101 01
- Integrated-circuit balanced parametric amplifier
M-FS-23193 B75-10102 01
- Laser-to-electricity energy converter for short wavelengths
NPO-13390 B75-10119 03
- Schottky barrier solar cell promises improved efficiency
NPO-13482 B75-10125 03
- Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 B75-10145 08
- SEMICONDUCTOR JUNCTIONS**
Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10256 B70-10444 04
- Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
- Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
- SEMICONDUCTOR LASERS**
Formation of internally-confined semiconductor lasers
LANGLEY-11770 B75-10299 08
- SEMICONDUCTORS (MATERIALS)**
Improved solid state electron-charge-storage device
HQ-10152 B70-10074 01
- Diffusion technique for lithium-doped silicon
GSFC-10827 B70-10148 01
- Piezoelectric transducer
HQ-10548 B70-10157 01
- Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01
- Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
- Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 B70-10298 01
- Coplanar interconnection module
ERC-10237 B70-10378 01
- Multipoint semiconductor devices
ERC-10293 B70-10448 01
- Resistivity and Hall measurements of thermoelectric materials
M-FS-20470 B71-10015 03
- Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
- Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
- Solar cell power scanner
LEWIS-11280 B71-10223 02
- Gate protective device for insulated gate field-effect transistors
M-FS-21626 B72-10149 01
- Study of in-situ degradation of thermal control surfaces
M-FS-20892 B72-10336 04
- Overlap diffusion for increasing phototransistor dynamic range
M-FS-20407 B72-10347 01
- Redundancy approaches in bubble domain memories
M-FS-21915 B72-10643 01
- Hermetic-coaxial package design for microwave transistors
GSFC-10791 B73-10427 01
- SENSITIVITY**
Compact apparatus for photogeneration of hydrated electrons
ARG-10487 B70-10036 03
- Mass spectrometer detects high molecular weight components
HQ-10477 B70-10057 01
- Estimating sensitivity of vacuum gages
LEWIS-11007 B70-10099 03
- Null type instrument for simplifying two dimensional field plotting
XLA-08493 B70-10192 01
- Picosecond pulse measurement by two-photon excitation of photographic film
ERC-10227 B70-10377 02
- Pilot-boost control valve
M-FS-20635 B70-10558 07
- Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01
- An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03
- Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
- Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03
- A topological approach to computer-aided sensitivity analysis
ARC-10214 B71-10164 02
- Multiloop distributed RC active networks
ARC-10200 B71-10177 01
- Catheter transducer and circuit
ARC-10132 B71-10234 01
- Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
- Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
- Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03
- Determination of impact sensitivity of materials at high pressures
MSC-13700 B72-10216 07
- Simple dynamic electromagnetic radiation detector
LEWIS-11159 B72-10227 03
- Improved intensifying screen reduces X-ray exposure
AEC-10090 B72-10232 03
- Laboratory leak tester provides high sensitivity
AEC-10042 B72-10240 03
- Helium leak measurements using CO₂ as a carrier
M-FS-21742 B72-10354 03
- Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09
- An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03
- Method of predicting ionization-type vacuum gage sensitivity for various gases
LEWIS-12056 B73-10409 03
- Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
- Rapid method for determination of antimicrobial susceptibilities pattern of urinary bacteria
GSFC-12039 B75-10253 05
- SENSITIZING**
Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
- Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03
- SENSORIMOTOR PERFORMANCE**
New reaction tester accurate within 56 microseconds
MSC-13604 B72-10031 05
- SENSORS**
Very low velocity flow sensor uses fluidic techniques
ERC-10404 B70-10461 03
- Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03
- Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02
- Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
- Position indicating, rotating boom
LANGLEY-11202 B72-10066 07
- A reliable liquid helium detector
LEWIS-11487 B72-10145 01
- Vibrating ribbon bolometer: A concept
XAC-10768 B72-10170 03
- SEPARATED FLOW**
Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07
- SEPARATION**
Separation of two bodies in space
NPO-10663 B70-10625 09
- A method of isolating organic compounds present in water
AEC-10010 B72-10044 04
- SEPARATORS**
Shelf and cycle life evaluation of silver-zinc cells
NPO-11258 B70-10214 01

Electrodeposited inorganic separators for alkaline batteries
 GSFC-10943 B70-10462 01
 Improved charged-particle analyzer - A concept
 XAC-05506 B71-10283 03
 Mass separator for low velocity ions
 ARC-10375 B72-10123 03
 Separation of gas mixtures by centrifugation
 ARC-10449 B72-10270 03
 Hydrophobic liquid/gas separator for heat pipes
 ARC-10656 B72-10549 03
 Electrophoresis separator combining centrifugal separation
 M-FS-21396 B73-10328 04
 Procedure for dispersing fiber bundles
 LANGLEY-11224 B73-10438 08
 Ferrofluid separator for nonferrous scrap separation
 LANGLEY-11523 B73-10463 07
 Methods for improved resolution of flow electrophoresis cells
 M-FS-22223 B74-10032 04
 Two-phase, passive separator-and-filter assembly
 LANGLEY-10976 B74-10133 04
 Liquid sample processor
 NPO-13136 B74-10278 05

SEQUENCING
 PERT "C"
 M-FS-20164 B70-10184 09
 Improved convolutional coding
 MSC-13625 B70-10698 09
 Digital-coded matrix system simplifies design and construction of flow charts
 MSC-13539 B71-10086 09
 Method for constructing periodic orbits in nonlinear dynamic systems
 M-FS-14654 B71-10151 09
 Calibration-interval adjustment indicator - A concept
 M-FS-18693 B71-10309 01
 Novel shift register eliminates logic gates and power switching circuits
 GSFC-10517 B71-10322 01
 Study-simulation of space station dynamics
 M-FS-21227 B71-10382 09
 Advanced-priority interrupt module
 NPO-13067 B74-10165 02

SEQUENTIAL ANALYSIS
 Simultaneous random and sequential computer processing using an expanded sequential index
 M-FS-20266 B70-10265 09

SEQUENTIAL COMPUTERS
 PERT "C"
 M-FS-20164 B70-10184 09
 Time Data Sequential Processor /TDSP/
 NPO-11327 B70-10720 09
 A study of accuracy in selected numerical-analysis integration techniques
 MSC-14802 B75-10273 09

SEQUENTIAL CONTROL
 Piezoelectric actuator uses sequentially-excited multiple elements: A concept
 NPO-11527 B72-10096 01
 Flexible desk top computers using Large Scale Integration (L.S.I.) chips
 M-FS-21277 B72-10112 01
 Sequential-strip and sequential-disk filters
 JSC-14592 B73-10430 06

SERIES (MATHEMATICS)
 Use of multivariable asymptotic expansions in a satellite theory
 NPO-11750 B73-10303 09

SERVICE LIFE
 Easy manual operation of overhead garage doors - A concept
 KSC-10555 B70-10543 07
 Lamp modulator provides signal magnitude indication
 KSC-10565 B70-10700 01
 High temperature circuit breaker
 LEWIS-90265 B70-10721 01
 Welded polypropylene liners for large descaling tanks
 M-FS-18711 B71-10012 07
 High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07
 Improved high-temperature metal-sheathed cables
 NUC-10413 B71-10102 01
 Predicting service life margins
 M-FS-24015 B71-10194 06
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 B71-10298 02
 Accelerated battery-life testing - A concept
 GSFC-11085 B71-10348 06
 Table for estimating parameters of Weibull distribution
 M-FS-18817 B71-10436 03
 High-temperature, long-life thyatron
 LEWIS-11327 B72-10134 01
 Improved operation of rechargeable oxygen electrodes
 LEWIS-11619 B72-10479 01
 Advanced alloy design technique: High temperature cobalt base superalloy
 LEWIS-10436 B72-10514 04
 Micro-scale crease-and-fold apparatus
 NPO-12029 B72-10552 06

SERVICES
 Logistics hardware and services control system
 KSC-10819 B73-10418 09

SERVOCONTROL
 The use of the chatter mode in self-adaptive systems
 HQ-10159 B70-10274 06
 New model performance index for engineering design of control systems
 HQ-10520 B70-10293 06
 Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Automatic optometer operates with infrared test pattern
 ARC-10095 B70-10401 05
 Thumb-actuated control device
 ARC-10019 B70-10407 01
 Pilot-booster control valve
 M-FS-20635 B70-10558 07
 Stabilization of interferometer fringe patterns
 ARC-10392 B71-10119 02
 Digital decorrelator saves time and expense in acoustic testing of structures
 NPO-11542 B71-10157 03
 Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
 M-FS-18793 B71-10430 06

Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02
 Particle detection by a light-scattering technique
 ARC-10384 B72-10160 03
 Vortex servovalve for fluidic or electrical input
 ARC-10155 B72-10173 07
 New motor shaft angular accelerometer concept
 LANGLEY-11030 B73-10119 02
 Automatic quadrature control and measuring system
 M-FS-21660 B73-10127 02
 Advanced action manipulator system (ADAMS)
 M-FS-22022 B73-10204 07
 Digital servo control of random sound fields
 NPO-11623 B73-10297 02
 Digital servo controller behaves like synchro
 KSC-10769 B73-10337 02
 Closed-circuit television welding-electrode guidance system
 M-FS-23026 B74-10150 02
 Implementation of a self-controlling heater: A concept
 GSFC-11752 B74-10241 06
 Stable group delay cable
 NPO-13138 B74-10295 01

SERVOMECHANISMS
 Slow-speed drives for miniature devices
 NPO-10700 B70-10007 02
 Performance-limit criteria for the design of fast-response servo-actuation systems
 LEWIS-11022 B70-10152 02
 Pneumatic amplifier controls high pressure fluid supply
 MSC-12121 B71-10081 07
 On-line analysis of random vibrations
 ARC-10154 B71-10284 09
 Wind tunnel buffet load measuring technique
 ARC-10495 B72-10022 06
 Linear kinematic air bearing
 NPO-13151 B73-10456 06
 Mechanical coupling for high cyclic loading
 LEWIS-11690 B74-10001 06
 Pulse-width-modulated servo valve for autopilot system
 LANGLEY-11643 B74-10179 06
 Torque control system
 GSFC-11077 B75-10085 06

SERVOMOTORS
 Automatic optometer operates with infrared test pattern
 ARC-10095 B70-10401 05
 Visual focus stimulator aids in study of the eye's focusing action
 ARC-10049 B70-10568 05
 Efficient pressure-transformer for fluids
 M-FS-20830 B70-10595 07
 Attitude controls for VTOL aircraft
 XAC-8972 B71-10202 05
 Hydraulic actuator motion limiter ensures operator safety
 ARC-10131 B71-10233 07
 Vibrating ribbon bolometer: A concept
 XAC-10768 B72-10170 03
 Film handling system for laser scanner/recorder
 MSC-14121 B72-10539 07

- New motor shaft angular accelerometer concept
 LANGLEY-11030 B73-10119 02
- SET THEORY**
 Cubic spline functions for curve fitting
 LRL-10034 B72-10311 09
 A linear programming manual
 HQ-10743 B72-10671 09
- SEWAGE**
 Metered oxygen supply aids treatment of domestic sewage
 ARC-10024 B72-10557 05
 Processing for obtaining good quality water from sewage
 NPO-13224 B75-10113 04
- SHADES**
 Thermal heliotrope - A passive sun-tracker
 GSFC-10945 B71-10260 03
- SHADOWS**
 Graphics shadowing analysis
 M-FS-21406 B74-10040 09
- SHAFTS (MACHINE ELEMENTS)**
 Tandem wheel drop-legs for standard truck trailer
 M-FS-13466 B70-10088 07
 Low-cost orbiting grinder for cutting ducts
 M-FS-20684 B70-10126 07
 Improved mechanical remote control assembly - Concept
 M-FS-16249 B70-10144 07
 Investigation of positive shaft seals
 M-FS-18589 B70-10176 07
 Self-lubricating fluorine shaft seal material
 HQ-10112 B70-10222 04
 Induction generator produces constant-frequency voltage from variable-speed drive
 ERC-10065 B70-10478 02
 New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06
 Long life, low cost ball valve, with lifted seals and cartridge type construction
 MSC-13430 B70-10653 07
 High-reliability release mechanism
 LEWIS-11233 B71-10080 07
 Remote coupling of air lines
 NUC-10225 B71-10101 07
 An investigation of tandem-row, high-head pump inducers
 M-FS-21139 B71-10152 07
 Preparation of homogeneous vitreous materials for electronic and optical devices
 HQ-10670 B71-10172 04
 Hot tap thermowell installation
 MSC-12427 B71-10302 07
 Hermetically sealed motion transmitter
 MSC-17348 B71-10328 07
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Shutter design for stereoscopic camera
 MSC-13613 B71-10506 03
 High speed, self-acting, face-contact shaft seal has low leakage and very low wear
 LEWIS-11598 B72-10114 07
 Micro regulating ball valve
 ARC-10295 B72-10121 06
 Angular velocity and acceleration meter
 LEWIS-11466 B72-10183 06
 Low cost anti-galling bushings
 LEWIS-11724 B72-10359 08
- High-speed, self-acting shaft seal (circumferential type)
 LEWIS-11274 B72-10447 07
 Adjustable locking device
 M-FS-21650 B72-10459 07
 Computer program for calculating the temperature field of face seals
 LEWIS-11110 B72-10483 09
 Sprag solenoid brake
 M-FS-21846 B72-10669 06
 Improved lip seal for rotating shafts
 LEWIS-11602 B72-10672 07
 Mechanical planetary compensating drive system
 ARC-10462 B73-10497 06
 Improved circumferential shaft seal
 LEWIS-11873 B74-10062 07
 Design criteria monograph for valve components
 LEWIS-12327 B74-10087 06
- SHAKERS**
 Artificial-feedback system
 GSFC-10324 B70-10421 02
 Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02
 Dynamic testing of complex structures
 JSC-12569 B73-10057 06
 A multidegree-of-freedom vibrational apparatus
 GSFC-11302 B73-10332 06
- SHAPED CHARGES**
 Apparatus for monitoring linear explosive performance
 LANGLEY-10800 B74-10201 04
- SHAPERS**
 Hobel stripper for shielded and unshielded flat conductor cable
 M-FS-20120 B71-10060 08
- SHEAR FLOW**
 Wind tunnel investigations at transonic Mach numbers
 M-FS-20895 B71-10254 06
- SHEAR LAYERS**
 Atmospheric pollution measurement by optical cross correlation methods - A concept
 M-FS-12078 B71-10224 02
- SHEAR PROPERTIES**
 Improvement of adhesive-bonded structural joints
 M-FS-20876 B70-10663 08
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Evaluation of omniweave reinforcement for composite fabrication
 M-FS-20946 B71-10245 04
 Rising-plate rheometer
 ARC-10524 B72-10026 03
- SHEAR STRENGTH**
 Effects of decontamination, sterilization, and thermal vacuum on polymeric products
 NPO-11250 B70-10208 04
 Self-lubricating fluorine shaft seal material
 HQ-10112 B70-10222 04
 New structural approach for determining load carrying capability of filament wound composite materials
 M-FS-15121 B70-10408 06
 Filled polymers for bearings and seals used in liquid hydrogen
 LEWIS-10887 B70-10573 04
- Repair of brazed steel honeycomb-sandwich panels with vertical pins only
 MSC-15831 B70-10624 08
 Improvement of adhesive-bonded structural joints
 M-FS-20876 B70-10663 08
 A concept for improving the dimensional stability of filamentary composites in one direction
 LANGLEY-10443 B71-10061 04
 Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04
 Instant acting adhesive system
 MSC-13732 B71-10317 04
 Resin additive improves performance of high-temperature hydrocarbon lubricants
 LEWIS-11364 B71-10394 04
 New primers for adhesive bonding of aluminum alloys
 M-FS-21387 B71-10488 04
 Small-scale explosive welding of aluminum
 LANGLEY-10941 B72-10002 04
 A new vibration dampening adhesive
 MSC-17668 B72-10284 04
 Graphite and boron-reinforced composite materials data summary
 M-FS-21691 B72-10294 04
 Adhesive for aluminum withstands cryogenic temperatures
 M-FS-16848 B72-10346 04
 High-strength rivet does not require aging
 MSC-19301 B75-10044 06
- SHEAR STRESS**
 A concept for improving the dimensional stability of filamentary composites in one direction
 LANGLEY-10443 B71-10061 04
 Bonding titanium to Rene 41 alloy
 ARC-10311 B72-10041 08
 Cryogenic gel flow viscometer
 ARC-10523 B72-10180 03
 Angular velocity and acceleration meter
 LEWIS-11466 B72-10183 06
 Residual stress effects on the impact resistance and strength of fiber composites
 LEWIS-11984 B73-10063 04
 A flexible all-temperature pressure vessel
 M-FS-19196 B73-10158 03
 Probe for measuring turbulent real-time shear-stress waves
 ARC-10755 B74-10072 03
- SHEARING**
 Metal-shearing energy absorber
 HQ-10638 B71-10503 07
- SHEATHS**
 A stabilized low-frequency alternating-current electric arc
 LEWIS-10442 B70-10065 01
 Improved shielding termination adapter for electrical cable connectors
 MSC-15565 B70-10217 01
 Improved high-temperature metal-sheathed cables
 NUC-10413 B71-10102 01
 Improved sheath removal technique for very small thermocouples
 LEWIS-11228 B71-10179 01
 Protective coating for salt-bath brazing
 LEWIS-90255 B71-10381 08
 Explosive cord
 M-FS-21928 B72-10293 08

SHELL STABILITY

Vibration characteristics of ring-stiffened orthotropic shells of revolution

LANGLEY-10989 B71-10535 09

Computer program for stress, vibration, and buckling characteristics of general shells of revolution

LANGLEY-11369 B73-10363 09

Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option

LANGLEY-11569 B74-10186 09

SHELL THEORY

Automated Shell Theory for Rotating Structures (ASTROS)

M-FS-21970 B73-10115 09

Design standards for low-profile flanges

M-FS-22708 B74-10033 09

SHELLS (STRUCTURAL FORMS)

New structural approach for determining load carrying capability of filament wound composite materials

M-FS-15121 B70-10408 06

High-impact dynamic-response analysis of nonlinear structures

NPO-11716 B71-10134 09

Fabrication of large tungsten structures by chemical vapor deposition

LEWIS-11239 B71-10212 08

Differential expansion fitting for cryogenic liquid tanks

LEWIS-11260 B71-10268 08

Isogrid structure

M-FS-21567 B72-10323 06

Geometrically nonlinear static and dynamic analysis of arbitrarily loaded shells of revolution

LANGLEY-11109 B72-10504 09

Dynamic nonlinear analysis of shells of revolution (DYNASOR II)

JSC-14496 B73-10443 09

Frequencies and modes for shells of revolution (FAMSOR)

JSC-14497 B73-10444 09

The static nonlinear analysis of shells of revolution (SNASOR II)

JSC-14495 B73-10445 09

Stiffness and mass matrices for shells of revolution (SAMMSOR II)

JSC-14494 B73-10446 09

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4

LANGLEY-11209 B74-10205 09

SHIELDING

Measuring the conductor spacing in flat conductor cables

M-FS-20560 B70-10015 08

Improved shielding termination adapter for electrical cable connectors

MSC-15565 B70-10217 01

Biological handbook for engineers

M-FS-20349 B70-10255 05

Lightweight, self-evacuated insulation panels

LEWIS-90361 B70-10646 03

A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles

LEWIS-10951 B70-10648 01

Hobel stripper for shielded and unshielded flat conductor cable

M-FS-20120 B71-10060 08

Computer program for thermal analysis of shadow shields in a vacuum

LEWIS-11236 B71-10115 09

Flat conductor cable handbook

M-FS-21009 B71-10379 01

Shielding method for polycrystalline and epitaxy growths

M-FS-20162 B71-10434 04

Rotary stripper for shielded and unshielded FCC

M-FS-20119 B71-10465 08

Small-scale explosive welding of aluminum

LANGLEY-10941 B72-10002 04

Electrical grounding bracket

ARC-10041 B72-10045 01

Baffle to confine glow discharge in ion pump

M-FS-21575 B72-10324 03

A four-panel enclosure protects from explosion

M-FS-21847 B72-10613 06

Boron-10 loaded inorganic shielding material

M-FS-22280 B72-10740 04

SHIFT REGISTERS

Digital frequency discriminator

M-FS-14322 B70-10010 01

Constant-voltage drive current-steering switch

NPO-10743 B70-10046 01

Digital-voltage curve generator

NPO-11104 B70-10590 02

Improved convolutional coding

MSC-13625 B70-10698 09

High-speed digital plotter

ARG-90001 B71-10049 02

Digital telemetry system eliminates data redundancy

MSC-12388 B71-10082 02

Digital decorrelator saves time and expense in acoustic testing of structures

NPO-11542 B71-10157 03

An improved telemetry system

ARC-10336 B71-10201 01

Efficient digital comparison technique for logic circuits

M-FS-21080 B71-10218 02

Novel shift register eliminates logic gates and power switching circuits

GSFC-10517 B71-10322 01

High efficiency telemetry method

NPO-10388 B71-10371 02

Principles of error detection and error correction codes

NPO-11487 B71-10408 02

Digital aspect clock

ARC-10088 B71-10440 02

Theory and application of feedback shift registers

NPO-11486 B71-10451 02

Voter comparator switch provides fail safe data communications system - A concept

MSC-13932 B71-10504 02

Techniques for improving reliability of computers

M-FS-21326 B72-10109 02

Improved feedback shift register

NPO-10351 B72-10226 01

A manually set magnetic wire counter

AEC-10039 B72-10369 01

An improved learning decoder

MSC-14070 B72-10573 02

A simplified, compact static shift register

HQ-10723 B72-10591 02

Redundancy approaches in bubble domain memories

M-FS-21915 B72-10643 01

Minimal hardware, binary sequence pseudonoise generator and detector

NPO-11406 B73-10292 01

Synchronized frequency transposer

GSFC-11763 B74-10256 01

Fourier waveform analyzer

GSFC-11747 B75-10070 01

SHIPS

A report of advancements in structural dynamic technology resulting from Saturn 5 programs

LANGLEY-10684 B70-10710 06

Accumulative weights program

M-FS-15066 B71-10181 09

Short-range laser obstacle detector

NPO-11856 B74-10101 03

Highly-visible air-sea rescue marker

MSC-12564 B75-10166 05

Removal of ice and marine growth from ship surfaces: A concept

NPO-13658 B75-10282 06

SHOCK ABSORBERS

Dry-frictional shock absorber

NPO-11212 B70-10040 07

Lightweight, high-strength, reinforced plastic tube-framing die

LANGLEY-10126 B70-10273 04

Fiberglass honeycomb elements formed quickly and cheaply

LANGLEY-10125 B70-10342 08

Flexible protection for metal bellows

KSC-10520 B70-10350 06

Metal-shearing energy absorber

HQ-10638 B71-10503 07

Emergency-escape device

M-FS-22720 B73-10369 07

Control of elasticity in cast elastomeric shock/vibration isolators

KSC-10850 B74-10039 07

Artificial limb connection

KSC-10833 B74-10183 05

The impact of water on free-falling bodies

M-FS-23310 B75-10311 03

SHOCK FRONTS

Comparison of aerodynamic noise from three nose-cylinder combinations

M-FS-20816 B70-10690 03

SHOCK HEATING

Controlled flow assembly

M-FS-21716 B72-10404 07

SHOCK LAYERS

Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations

LANGLEY-11048 B72-10067 09

SHOCK LOADS

Lightweight, high-strength, reinforced plastic tube-framing die

LANGLEY-10126 B70-10273 04

SHOCK RESISTANCE

Simple bonding technique for high-temperature ceramic coatings

LEWIS-11085 B70-10580 08

Simple, shock-free, quick-release connector - A concept

LEWIS-11178 B71-10146 07

New materials for fireplace logs

M-FS-21363 B71-10339 04

Landing dynamics program for impact attenuating vehicles / LANDIT/

NPO-10840 B71-10472 09

Isotropic pyrolytic carbons

ARC-10532 B72-10029 04

Piezoelectric relay

GSFC-11627 B74-10089 01

- Shock and vibration isolation mount for small electronic components
NPO-13253 875-10049 01
- SHOCK TESTS**
Criteria for vibration testing
GSFC-10737 871-10266 06
- SHOCK TUBES**
Thermoelectric radiometer
ARC-10138 870-10056 02
A program for computing shock-tube gas dynamic properties
NPO-11068 870-10133 09
Plasma conductivity gage
ARC-10147 870-10510 03
Electrical instrument measures position and velocity of shock waves
ARC-10356 871-10143 03
Optical shutter for use in shock tubes
ARC-10516 872-10128 03
Improved high-performance shock tube
NPO-11885 872-10242 03
Amplifier for signal from thin film transducer
LEWIS-11494 872-10463 01
High-speed spectrograph for shock tube studies
ARC-10772 873-10501 03
- SHOCK WAVE ATTENUATION**
Improved high-performance shock tube
NPO-11885 872-10242 03
- SHOCK WAVE GENERATORS**
Wind tunnel buffet load measuring technique
ARC-10495 872-10022 06
Computer modeling of arc drivers
ARC-10955 875-10130 09
- SHOCK WAVES**
Jettisoning system for a parachute's canister
NPO-11236 870-10398 06
Multipass holographic interferometer improves image resolution
HQ-10499 870-10426 03
Plasma conductivity gage
ARC-10147 870-10510 03
Synthesis of diamonds
M-FS-20698 870-10513 08
An unconfined, large-volume hydrogen/air explosion
NUC-11000 871-10041 03
Electrical instrument measures position and velocity of shock waves
ARC-10356 871-10143 03
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 871-10216 04
Compressed gas handbook
KSC-10662 871-10272 03
Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 871-10475 05
Optical shutter for use in shock tubes
ARC-10516 872-10128 03
Explosive cord
M-FS-21928 872-10293 08
Chemical kinetics computer program for static and flow reactions
LEWIS-11467 872-10580 04
Study of high altitude plume impingement
M-FS-21414 872-10601 09
- SHOES**
Ultrasonic scanner for footprint identification
NPO-13055 874-10212 03
- SHOPS**
Instruction manuals for radiographic nondestructive testing
M-FS-21350 871-10156 06
Recommended safety guides for industrial laboratories and shops
SAN-10050 871-10175 07
- SHORT CIRCUITS**
Transistor current and voltage limiting switch
NPO-11166 870-10414 01
Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 871-10182 01
Automatic cross-sectioning and monitoring system locates defects in electronic devices
GSFC-11221 871-10221 01
Silicon contact for area reduction of integrated circuits
M-FS-20688 871-10368 01
Sheet plastic filters for solar cells
NPO-11464 872-10090 04
New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 872-10455 01
- SHORT TAKEOFF AIRCRAFT**
Ejector nozzle with massive blowing
ARC-10621 872-10693 06
Radial honeycomb core
ARC-10727 873-10340 08
Vented vectoring-nozzle for STOL and V/STOL aircraft
ARC-10839 874-10058 06
- SHORT WAVE RADIATION**
Laser-to-electricity energy converter for short wavelengths
NPO-13390 875-10119 03
- SHOT PEENING**
Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 870-10396 04
- SHOULDERS**
Improved orthopedic arm joint
M-FS-21611 871-10485 05
Quick-donning backpack harness
LANGLEY-10102 872-10641 05
- SHRAPNEL**
Economical technique for fragmentation testing
ARC-10792 874-10052 04
- SHRINKAGE**
Contact material for pressure-sintering ferrites
ERC-10213 870-10380 01
High strength, medium density molded foam
AEC-10053 872-10235 04
Fabrication of uniaxial filament-reinforced epoxy tubes for structural application
LANGLEY-10203 872-10340 04
Low cost anti-galling bushings
LEWIS-11724 872-10359 08
Apparatus for heat treating plastic belts
NPO-13205 874-10299 02
- SHROUDS**
A concept for improving efficiency of multistage centrifugal pumps
LEWIS-10966 870-10287 07
Fabricating subscale components for application to full-scale parts
M-FS-20805 870-10390 07
- Prediction of windage power loss in alternators
LEWIS-10939 871-10074 06
Split stator vane row for fans and compressors
ARC-10288 871-10528 06
Reduction of noise in gyro outputs
NPO-11603 872-10743 06
Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 873-10411 02
- SHUTTERS**
Airborne spectrometer senses several gases
MSC-13234 870-10438 03
High intensity heat-pulse source operates without cooling system
ARC-10178 870-10694 03
Thermal and structural modeling of superinsulation
M-FS-20324 871-10019 02
Optical shutter for use in shock tubes
ARC-10516 872-10128 03
Rotary shutter mechanism contains optical elements
GSFC-11244 872-10387 03
- SIDE-LOOKING RADAR**
Analysis of orbital heat transfer
ARC-10842 874-10115 02
- SIDEBANDS**
Telemetry receiver
NPO-10746 870-10008 02
Circuit suppresses spurious sidebands
MSC-13425 870-10541 01
Waveshaping electronic circuit
M-FS-14916 871-10429 01
Accurate measurement of telemetry performance
NPO-11457 872-10089 02
- SIDELobe REDUCTION**
Enhancing efficiency of single, large-aperture antennas
HQ-10597 871-10287 01
- SIDELOBES**
Redirecting electromagnetic beams through wide angles
ARC-10602 872-10307 03
- SIEVES**
Mechanical sieve for screening mineral samples
HQ-10242 870-10083 04
Molecular sieves control contamination and insulate in thermal regenerators - A concept
GSFC-10910 870-10424 07
A lightweight, high output soil sampler
NPO-10797 871-10159 07
- SIGNAL ANALYSIS**
A study of the power spectral density of an FM signal
M-FS-21070 872-10361 02
Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 874-10025 02
Closed-circuit television welding-electrode guidance system
M-FS-23026 874-10150 02
Fourier waveform analyzer
GSFC-11747 875-10070 01
Quasars as very-accurate clock synchronizers
NPO-13276 875-10114 02
Sound separation probe
LEWIS-12507 875-10286 03
- SIGNAL ANALYZERS**
High-resolution spectral analysis
NPO-10748 870-10039 01

High-speed digital plotter
 ARG-90001 B71-10049 02
 Dual-frequency feed-horn antenna
 GSFC-10820 B71-10056 02
 A range expanding signal conditioner
 M-FS-21720 B72-10639 02
 Peak-holding circuit for extremely narrow pulses
 JSC-14129 B73-10317 02
 Pulse stretcher for narrow pulses
 JSC-14130 B73-10365 02

SIGNAL DETECTION

High-accuracy detector for laser radar
 MSC-13275 B70-10570 01
 Aircraft-crash-locating transmitter features design improvements
 M-FS-16609 B71-10213 02
 Isosceles detector provides maximum resolution in expanded range
 GSFC-10932 B71-10279 01
 Miniature carbon dioxide sensor
 MSC-13332 B71-10536 03
 Technique minimizes the effects of dropouts on telemetry records
 NPO-11421 B72-10088 02
 Optical enhancement of sensitivity in laser Doppler velocity systems
 ARC-10653 B72-10310 03
 A range expanding signal conditioner
 M-FS-21720 B72-10639 02
 All-digital phase-lock loops for noise-free signals
 NPO-11914 B73-10350 01
 Frequency discriminator/phase detector
 NPO-11515 B74-10098 02

SIGNAL DETECTORS

New data acquisition system records bearing measurements directly
 LEWIS-10510 B70-10503 06
 Hyperbola-generator for location of aperiodic events
 LANGLEY-10312 B70-10695 06
 Electronic device increases threshold sensitivity and removes noise from FM communications receiver
 MSC-12165 B71-10091 02
 A real-time statistical time-series analyzer
 MSC-12428 B71-10276 02
 Statistical measurements of the zero-crossing time of a noisy sinewave
 GSFC-11004 B71-10502 02
 Anti-multipath digital signal detector
 LANGLEY-11379 B74-10137 02
 New broadband square-law detector
 NPO-13410 B75-10180 02
 Synchronizer for random binary data
 NPO-13286 B75-10325 02

SIGNAL DISTORTION

Low-distortion receiver for bilevel, baseband PCM waveforms
 MSC-14557 B74-10025 02
 Dynamic polarization compensating system for optical communications receiver
 GSFC-11782 B74-10182 03

SIGNAL ENCODING

Kaleidoscopic light feedback for television systems
 MSC-12386 B71-10068 03
 Study of nondestructive techniques for redundancy verification
 KSC-10661 B71-10258 02
 High efficiency telemetry method
 NPO-10388 B71-10371 02

Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
 Dual redundant core memory systems
 MSC-13993 B72-10261 09
 Speech therapy and voice recognition instrument
 HQ-10628 B72-10652 05
 Generation of key in cryptographic system for secure communications
 NPO-13451 B75-10278 09

SIGNAL FADING

An improved learning decoder
 MSC-14070 B72-10573 02

SIGNAL FLOW GRAPHS

A topological approach to computer-aided sensitivity analysis
 ARC-10214 B71-10164 02
 Graphical method for analyzing digital computer efficiency
 ARC-10210 B71-10453 09

SIGNAL GENERATORS

A simple tester provides resonant frequency measurements of ferrite devices
 NPO-10678 B70-10033 01
 Radio frequency baseband recording technique
 HQ-10317 B70-10069 02
 Graphical method to predict the dynamic response of FM receivers
 KSC-10111 B70-10119 01
 Ultrastable reference pulser for high-resolution spectrometers
 ARG-10364 B70-10216 01
 Two-axis flux gate magnetometer
 GSFC-10441 B70-10345 01
 Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Phase interpolation circuits using frequency multiplication for phased arrays
 ERC-10285 B70-10457 02
 Dual-wavelength system monitors deposition of films - A concept
 M-FS-20675 B70-10658 03
 Performance evaluation system for inertial navigation equipment
 MSC-13542 B71-10087 02
 Wein bridge oscillator circuit
 MSC-13686 B71-10089 01
 A 20 kHz power oscillator
 LEWIS-11319 B71-10174 01
 Instrument accurately measures stress loads in threaded bolts
 M-FS-21121 B71-10486 01
 Differential input preamplifier
 ARC-10489 B72-10165 01
 Nondestructive testing of microtab welds
 ARC-10176 B72-10296 02
 Signal conditioner for potentiometer type transducers
 LEWIS-11822 B73-10015 01
 Signal conditioner test set
 KSC-10750 B73-10189 02

SIGNAL MEASUREMENT

Portable low-frequency vibration measuring and recording system
 LANGLEY-10543 B71-10126 02

SIGNAL MIXING

Signal mixer for optical heterodyne receiver
 M-FS-23251 B75-10307 03

SIGNAL PROCESSING

Radio frequency baseband recording technique
 HQ-10317 B70-10069 02
 Antenna-array, phase quadrature tracking system
 MSC-12205 B70-10095 02
 Analysis and optimization of an omnidirectional direction-finding system
 M-FS-14346 B70-10112 02
 Audio signal processor
 MSC-12223 B70-10180 01
 Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Log amplifier instrument measures physiological biopotentials over wide dynamic range
 ARC-10032 B70-10508 01
 Circuit suppresses spurious sidebands
 MSC-13425 B70-10541 01
 High-accuracy detector for laser radar
 MSC-13275 B70-10570 01
 Spectral analysis of oscillation instabilities in frequency standards
 M-FS-20778 B70-10572 02
 Constant current load matches impedances of electronic components
 GSFC-10982 B70-10643 01
 Optical probing of supersonic aerodynamic turbulence
 M-FS-20686 B70-10665 03
 Electronic strain-level counter
 LANGLEY-10756 B70-10716 02
 Dual-channel circuit conditions/amplifies transducers' inputs and outputs
 MSC-15712 B71-10069 01
 Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
 M-FS-20860 B71-10072 07
 Technique minimizes the effects of dropouts on telemetry records
 NPO-11421 B72-10088 02
 Dual redundant core memory systems
 MSC-13993 B72-10261 09
 A simple dead-reckoning navigational system
 M-FS-21165 B72-10409 02
 Very high speed direct-readout, control and recording system
 M-FS-20658 B72-10442 02
 Radio direction finder
 NPO-11573 B72-10508 02
 Remote measurement of the water content of snowpacks
 ARC-10651 B72-10567 03
 A range expanding signal conditioner
 M-FS-21720 B72-10639 02
 Low distortion automatic phase control circuit
 M-FS-21671 B72-10682 02
 Acoustic-emission signal-processing analog unit for locating flaws in large tanks
 M-FS-24424 B73-10325 06
 All-digital phase-lock loops for noise-free signals
 NPO-11914 B73-10350 01
 Low cost instrumentation amplifier
 LEWIS-12222 B74-10015 01
 Data processor with conditionally supplied clock signals
 GSFC-10975 B74-10021 02
 Third-order phase-locked loop receiver
 NPO-11941 B74-10104 02

- Fast signal averager
ARC-10090 874-10109 02
Decimal digit generator for commutated data: A Concept
ARC-10856 874-10120 01
Continuous Fourier transform system
ARC-10466 874-10170 02
Wide deviation phase modulator
LANGLEY-11607 874-10178 02
Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 874-10209 01
Synchronized frequency transposer
GSFC-11763 874-10256 01
Digital second-order phase-locked loop
NPO-11905 874-10274 01
Microelectronic fabrication of superconducting devices and circuits
NPO-13419 875-10120 01
A hybrid general-purpose bit synchronizer
MSC-14330 875-10169 02
New broadband square-law detector
NPO-13410 875-10180 02
Electrocardiogram signal analyzer
MSC-12710 875-10269 05
Highly stable analog-to-digital converter
NPO-13385 875-10277 01
Delay-lock-loop code-correlation synchronizer
GSFC-11868 875-10291 02
Time-of-arrival lightning activity location system
KSC-11006 875-10297 02
Power spectrum analysis of staggered quadrupole-shift-keyed signals
MSC-14865 875-10318 09
Multichannel high-speed correlator
NPO-13097 875-10323 02
Synchronizer for random binary data
NPO-13286 875-10325 02
- SIGNAL RECEPTION**
Temperature-controlled fluidic device A concept
HQ-10446 870-10167 03
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 870-10267 01
Improved manual radio frequency direction finder
M-FS-20507 870-10422 02
Coarse roll-rate gain-control circuit
ARC-10064 871-10204 01
Lightning flash detection system
ARC-10562 872-10272 02
Very high speed direct-readout, control and recording system
M-FS-20658 872-10442 02
Remote measurement of the water content of snowpacks
ARC-10651 872-10567 03
Multibeam-antenna feed system to isolate orthogonally polarized beams
NPO-13140 875-10046 02
- SIGNAL REFLECTION**
Lamp modulator provides signal magnitude indication
KSC-10565 870-10700 01
Radiation diffraction calculation program /DIFF2/
GSFC-11422 871-10462 09
- SIGNAL STABILIZATION**
Broadband RF-distribution amplifier
NPO-11401 872-10245 01
- A study of the power spectral density of an FM signal
M-FS-21070 872-10361 02
A technique to eliminate false lock in PCM demodulation
JSC-12494 873-10106 02
Phase shift keyed, pulse code modulated signal synchronizer
JSC-12462 873-10107 02
Electronic high pass filter
LEWIS-11600 874-10083 02
- SIGNAL TO NOISE RATIOS**
Digital data transition tracking loop improves data reception
NPO-10844 870-10009 02
Radio frequency baseband recording technique
HQ-10317 870-10069 02
Telemetry for impact acceleration measurements
ARC-10289 870-10079 01
Graphical method to predict the dynamic response of FM receivers
KSC-10111 870-10119 01
A self-tuning filter
ARC-10264 870-10337 01
Signal phase switches offer greater dynamic range
NPO-10709 870-10393 01
Biomedical sensing and display concept improves brain wave monitoring
ERC-10233 870-10447 05
Digital demodulation with data subcarrier tracking
NPO-10858 870-10518 02
An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 870-10611 03
Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 870-10620 03
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 870-10628 03
Laser beam hydrocarbon detector
ARC-10156 870-10631 03
Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 870-10661 04
Optical probing of supersonic aerodynamic turbulence
M-FS-20686 870-10665 03
Dual-channel circuit conditions/amplifies transducers' inputs and outputs
MSC-15712 871-10069 01
Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 871-10091 02
New filter technique improves home television reception
MSC-13729 871-10141 02
An improved telemetry system
ARC-10336 871-10201 01
Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 871-10208 04
Self-synchronizing, bi-orthogonal coded PCM telemetry system
GSFC-11237 871-10324 02
Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 871-10343 03
Double phase-lock loop with rapid transient response - A concept
GSFC-10864 871-10349 01
- Principles of error detection and error correction codes
NPO-11487 871-10408 02
Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 871-10502 02
Pulse excitation of bolometer bridges
ARC-10292 872-10054 01
Accurate measurement of telemetry performance
NPO-11457 872-10089 02
Signal to noise measurement circuit
GSFC-11239 872-10102 01
Manganese bismuth thin film for large capacity digital memories
M-FS-21246 872-10107 03
An improved learning decoder
MSC-14070 872-10573 02
A range expanding signal conditioner
M-FS-21720 872-10639 02
Reduction of noise in gyro outputs
NPO-11603 872-10743 06
Data-aided carrier tracking loops
NPO-11282 873-10356 01
Television noise-reduction device
JSC-12607 873-10431 02
Fast signal averager
ARC-10090 874-10109 02
Multichannel high-speed correlator
NPO-13097 875-10323 02
- SIGNAL TRANSMISSION**
Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 870-10230 09
RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 870-10664 02
Ferrite attenuator modulation improves antenna performance
NPO-12011 870-10702 01
Beam squint correction for a duplex, retrodirective phased array
GSFC-11023 871-10444 02
Heart catheter cable and connector
ARC-10406 872-10200 05
Lightning flash detection system
ARC-10562 872-10272 02
Blood pressure measurement and display system
MSC-13036 872-10334 05
Isolated transfer of analog signals
LANGLEY-11312 873-10513 02
- SIGNALS**
Amplifier for signal from thin film transducer
LEWIS-11494 872-10463 01
Universal dc signal conditioner
MSC-17526 872-10510 02
- SIGNATURES**
On-line analysis of random vibrations
ARC-10154 871-10284 09
- SILANES**
Improved process for synthesizing anilinosilane compounds
M-FS-14948 870-10105 04
Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 870-10600 04
Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 871-10303 04
Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 872-10445 08

SILICA GLASS

Readily fiberizable glasses having a high modulus of elasticity
 HQ-10593 B70-10432 04
 Low-temperature radiation-resistant material for ball-bearing retainers
 NUC-10058 B70-10576 04

SILICATES

Growing single crystals in silica gel
 ERC-10306 B70-10479 02
 Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04
 Research on bearing lubricants for use in a high vacuum
 M-FS-22119 B72-10469 04
 A visual-display and storage device
 GSFC-10901 B72-10647 02
 Microwave emission from granular silicates
 NPO-11702 B73-10140 03

SILICIDES

Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
 HQ-10450 B70-10206 04
 Oxidation-resistant coatings for refractory metals used in inert atmospheres
 NPO-11477 B70-10674 04
 Oxidation-resistant silicide coating applied to columbium alloy screen
 ARC-10186 B71-10229 04

SILICON

Improved beam-lead interconnection structure for uncased integrated circuit chips
 LANGLEY-10227 B70-10018 01
 Improved silicon solar cells
 LEWIS-10964 B70-10029 01
 Improved solid state electron-charge-storage device
 HQ-10152 B70-10074 01
 New transverse piezoresistance and pinch effect electromechanical transducers - A concept
 ERC-10088 B70-10075 01
 Diffusion technique for lithium-doped silicon
 GSFC-10827 B70-10148 01
 Determination of diffusion lengths in silicon by an X-ray method
 LEWIS-10984 B70-10150 01
 Inorganic bonding of semiconductor strain gages
 GSFC-10833 B70-10215 08
 An investigation of the strength of aluminum wire used in integrated circuits
 NPO-11219 B70-10275 01
 Thermally cascaded thermoelectric generator
 NPO-10753 B70-10280 03
 High temperature glass coatings for superalloys and refractory metals
 LEWIS-10700 B70-10430 08
 Laser scribing of silicon wafers
 ERC-10386 B70-10437 01
 Fabrication of electroacoustic RF amplifiers
 ERC-10266 B70-10460 01
 Extended-life magnetic recording heads
 GSFC-10097 B70-10521 01
 Silicon solar cells improved by lithium doping
 NPO-11390 B70-10585 04
 Improved protection for silicon solar cells
 LEWIS-11065 B70-10706 08

Environmental effects on silicon solar cells
 NPO-11475 B71-10282 02

Improved brazing technique for pyrolytic graphite
 NPO-12026 B71-10293 08
 A study of nitride devices for computer memory applications
 M-FS-20971 B71-10350 03

Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01
 Shielding method for polycrystalline and epitaxy growths
 M-FS-20162 B71-10434 04

Oxygen-layer structure improves lithium-doped silicon solar cells
 NPO-11403 B72-10085 03
 Introduction of lithium into the front surface of solar cells
 NPO-11404 B72-10086 02

Tornado detector and alarm
 M-FS-20915 B72-10106 01
 Long-term drift of thermocouples at 1600 K
 LEWIS-11471 B72-10176 01

Simple dynamic electromagnetic radiation detector
 LEWIS-11159 B72-10227 03
 Devolatilization of polymer resins
 GSFC-11358 B72-10280 04

Microminiature gas chromatographic column
 ARC-10594 B72-10306 04
 Failure in glass
 AEC-10088 B72-10364 04

Efficient wire-grid duplexer-polarized for CO₂ lasers
 GSFC-11403 B72-10440 03
 High intensity solar cell radiometer
 LEWIS-11549 B72-10480 01

Humidity resistant solar cell contacts
 HQ-10674 B72-10517 04
 Silicon-fiber blanket solar-cell array concept
 M-FS-22458 B73-10374 01

Silicon on sapphire for ion implantation studies
 LANGLEY-11415 B73-10522 04
 Low-temperature electrostatic silicon-to-silicon seals using sputtered borosilicate glass
 LANGLEY-11589 B74-10263 08

Low-Cost thin-layer silicon solar cells
 GSFC-12023 B75-10293 04

SILICON CARBIDES

Biaxial prestressing of brittle materials
 M-FS-20272 B70-10316 04
 Effect of wall roughness on liquid oscillations damping in rectangular tanks
 M-FS-20799 B70-10388 06

Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10256 B70-10444 04
 Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
 ERC-10277 B70-10445 03

New understanding of fiber composite materials
 NPO-11605 B71-10161 04
 Control of acceleration in sine/random vibration tests
 NPO-11482 B72-10091 02

Improved epitaxial process for fabricating silicon carbide semiconductor devices
 LEWIS-12094 B74-10017 04

SILICON COMPOUNDS

Polymer containing functional end groups is base for new polymers
 NPO-10998 B71-10184 04

SILICON CONTROLLED RECTIFIERS

Buck-boost dc voltage regulator
 GSFC-10735 B70-10005 01
 Improved antenna pattern recorder provides visual display of RF power
 M-FS-20447 B70-10230 09

Optimal electric-drive system for vehicles
 NPO-11210 B70-10435 02

A power semiconductor test circuit with reduced power requirements
 LEWIS-11175 B70-10498 01

Solid state remote circuit selector switch
 LEWIS-10387 B70-10579 01

Small, efficient power supply for xenon lamps
 MSC-13637 B70-10684 01

Voltage-controlled oscillator
 ARC-10078 B71-10171 01

Time-lapse camera for microscopy
 ARC-10423 B72-10125 05

Automatic method of measuring silicon-controlled-rectifier holding current
 LEWIS-11898 B72-10752 02

Impulse commutating circuit with transformer to limit reapplied voltage
 LEWIS-11849 B73-10004 01

Compact 20-kiloampere pulse-forming-network capacitor bank
 LEWIS-12009 B73-10171 01

SRC seal testing
 M-FS-22426 B73-10199 01

Self-healing fuse
 LEWIS-11964 B74-10004 02

SILICON DIOXIDE

Polyimide polymers provide improved ablative materials
 LEWIS-10861 B70-10300 04

Improved optical lens system
 NPO-11311 B70-10354 03

Heat-rejection windows for telescopes
 M-FS-20634 B70-10386 04

Technique for depositing silicon dioxide on indium arsenide improves adhesion
 ERC-10130 B70-10475 04

Growing single crystals in silica gel
 ERC-10306 B70-10479 02

Improved insulating materials effective at extremely high temperatures
 NPO-12067 B71-10289 04

Nonvolatile read/write memory element - A concept
 GSFC-10993 B71-10346 01

Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
 GSFC-10835 B71-10375 08

Improved elastomer for use with oxygen difluoride
 ARC-10528 B72-10027 04

Optical bonding agents for severe environments
 ARC-10459 B72-10063 04

Cell for electrolysis of water vapor
 ARC-10521 B72-10166 03
 Insolubilized enzymes for food synthesis
 ARC-10568 B72-10247 04

- A transmitting and reflecting diffuser for ultraviolet light
 LANGLEY-10385 B72-10611 03
- Development of chip passivated monolithic complementary MISFET circuits with beam leads
 M-FS-22264 B72-10696 01
- Rubber composition compatible with hydrazine
 NPO-11440 B73-10019 04
- Strain arrestor plate for mounting rigid insulating tiles
 JSC-14182 B73-10465 06
- Reusable silica surface-insulation material
 ARC-10721 B73-10504 04
- Self-regenerating desiccant system
 M-FS-23057 B74-10266 07
- Reflecting heat shields made of microstructured fused silica
 ARC-10949 B75-10144 04
- SILICON JUNCTIONS**
 Technique for producing bipolar and MOS field effect transistors on a single chip
 MSC-13358 B70-10218 01
- SILICON NITRIDES**
 Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
 GSFC-10835 B71-10375 08
- Silicon nitride used as a rolling-element bearing material
 LEWIS-12447 B75-10134 06
- SILICON OXIDES**
 Piezoelectric transducer
 HQ-10548 B70-10157 01
- Variable ratio beam splitter for laser applications
 ARC-10391 B71-10265 03
- Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 B71-10334 01
- Gate protective device for SOS array
 HQ-10745 B72-10755 01
- SILICON POLYMERS**
 Polymer containing functional end groups is base for new polymers
 NPO-10998 B71-10184 04
- SILICON RADIATION DETECTORS**
 Gas leak-detection system
 NPO-11405 B72-10087 03
- Inexpensive pocket-size solar energy meter (insolometer)
 LEWIS-12598 B75-10283 01
- SILICON TRANSISTORS**
 Circuit minimizes current drain caused by neon indicator lamps
 NUC-10157 B70-10534 01
- Coaxial inverted geometry epitaxial transistor
 ARC-10330 B72-10056 01
- P-channel silicone gate FET
 M-FS-22505 B73-10197 01
- Silicon switching transistor with high power and low saturation voltage
 NPO-11565 B73-10295 01
- Sputtered gold mask for deep chemical etching of silicon
 LANGLEY-11661 B75-10089 08
- SILICONE RESINS**
 Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01
- Opacified fibrous thermal insulation
 LEWIS-11235 B71-10406 03
- Improved mold release for filled-silicone compounds
 JSC-19300 B73-10338 04
- Adhesive coating eliminated in new honeycomb-core fabrication process
 LANGLEY-11134 B73-10439 08
- RF shielded connectors
 GSFC-11215 B73-10509 01
- Read-only optical storage medium
 M-FS-23169 B75-10305 03
- SILICONE RUBBER**
 Use of acrylic sheet molds for elastomeric products
 MSC-15636 B70-10019 08
- Heat-resistant pressure probe with high-frequency response
 NPO-11292 B70-10252 06
- Flexible protection for metal bellows
 KSC-10520 B70-10350 06
- Solid state bistable power switch
 ERC-10290 B70-10383 01
- Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
- Submersed sensing electrode used in fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01
- Protective encapsulation of implantable biotelemetry units
 ARC-10514 B72-10301 05
- Ultrasonic bone densitometer
 M-FS-20994 B72-10450 05
- Improved biomedical electrode
 MSC-13648 B72-10642 05
- Implantable drug therapy device: A concept
 NPO-11934 B72-10708 05
- Vacuum-stripped silicone binder for thermal-control paint
 M-FS-21397 B73-10060 04
- Nonflammable potting-encapsulating and conformal coating compounds
 JSC-14164 B73-10102 04
- Thermally responsive mechanical actuator
 GSFC-11697 B73-10208 04
- Elastic light-scattering modulator: A concept
 M-FS-22724 B73-10422 03
- Strain arrestor plate for mounting rigid insulating tiles
 JSC-14182 B73-10465 06
- Soft, thermally conductive material
 LANGLEY-10850 B74-10132 04
- Semipermanent sealing of leaks in high vacuum systems
 ARC-10881 B74-10175 04
- SILICONES**
 Improved heat shield/radiator
 NPO-11105 B70-10318 03
- Comparison of release torques of tightened bolts in vacuum and air
 M-FS-20773 B70-10395 06
- Torch kit for welding in difficult areas
 MSC-15704 B71-10070 08
- Modified bubble level senses pitch and roll angles over wide range
 MSC-13506 B71-10085 03
- High-temperature, long-life polyimide seals for hydraulic actuator rods
 LEWIS-11212 B71-10098 07
- Improved high-temperature metal-sheathed cables
 NUC-10413 B71-10102 01
- Subminiature transducer measures unsteady pressures
 ARC-10349 B71-10114 01
- A lightweight, high output soil sampler
 NPO-10797 B71-10159 07
- Improved thermal paint formulation
 M-FS-14706 B71-10180 03
- Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04
- Synthesis of temperature and solvent-resistant polymers
 M-FS-20848 B72-10342 04
- Bondability of RTV silicon rubber
 AEC-10026 B72-10367 04
- Evaluation of thermal insulation materials
 NPO-11586 B73-10020 04
- Method for casting polyethylene pipe
 ARC-10706 B73-10032 08
- Apparatus for cutting elastomeric materials
 NPO-13146 B73-10521 07
- Cushion module for stowing electronic equipment
 ARC-10779 B74-10073 04
- SILICONIZING**
 Nonflammable and abrasion resistant coating process for glass fibers
 MSC-14024 B72-10445 08
- Addition of silicon improves oxidation resistance of nickel based superalloys
 LEWIS-12138 B74-10007 04
- SILK**
 Effects of environmental exposure on cryogenic thermal insulation materials
 LEWIS-12007 B73-10213 04
- SILOXANES**
 Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01
- Improved method for reclaiming vacuum diffusion pump oil
 LEWIS-11647 B72-10511 04
- Ultraviolet and thermally stable polymer compositions
 ARC-10592 B72-10709 04
- SILVER**
 Cryogenic thermocouple calibration tables
 NUC-10551 B70-10197 03
- Improved heat shield/radiator
 NPO-11105 B70-10318 03
- Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
- Color television system using single gun color cathode ray tube
 ERC-10098 B70-10464 02
- Crystal growing by electrodeposition from dense gaseous solutions
 NPO-10440 B70-10676 04
- Resistivity and Hall measurements of thermoelectric materials
 M-FS-20470 B71-10015 03
- Submersed sensing electrode used in fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01
- High-temperature, long-life polyimide seals for hydraulic actuator rods
 LEWIS-11212 B71-10098 07
- Subminiature transducer measures unsteady pressures
 ARC-10349 B71-10114 01
- Inexpensive, large-diameter, radar tracking and calibration spheres
 XLA-11154 B71-10190 01
- A silver ion water sterilization system
 MSC-15734 B71-10278 04

- Environmental effects on silicon solar cells
NPO-11475 B71-10282 02
Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 B71-10337 06
Soldering iron temperature indicator
NPO-11545 B72-10098 02
Carbon dioxide concentrator
ARC-10245 B72-10194 05
Pressure-probe assembly for wind tunnels
ARC-10569 B72-10248 03
Explosive cord
M-FS-21928 B72-10293 08
Laser beam deflection control: A concept
MSC-13814 B72-10411 02
Silver stain for electron microscopy
ARC-10661 B72-10415 05
Improved photoetching fabrication method
LEWIS-11268 B72-10745 08
A new method for the determination of thin film porosity
HQ-10673 B73-10286 01
- SILVER ALLOYS**
Nickel-silver composition shows promise as catalyst for hydrogen-oxygen fuel cells
HQ-10565 B70-10035 01
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08
Stable palladium alloys for diffusion of hydrogen
NPO-11747 B73-10024 04
Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- SILVER CADMIUM BATTERIES**
Heater improves cold-temperature capacity of silver-cadmium batteries
GSFC-11913 B75-10071 01
- SILVER CHLORIDES**
Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05
Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
Fabrication techniques for organic electrolyte battery
AEC-10019 B72-10428 08
Application of biological filters in water treatment systems
JSC-14226 B73-10404 05
- SILVER COMPOUNDS**
Improved reversible coulometer cell
SAN-10051 B71-10176 02
Aluminum foil interconnects for solar cell panels
ARC-10374 B72-10058 08
- SILVER NITRATES**
Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 B70-10676 04
- SILVER OXIDES**
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
- SILVER ZINC BATTERIES**
Shelf and cycle life evaluation of silver-zinc cells
NPO-11258 B70-10214 01
- An explosion-proof battery case
MSC-12335 B70-10304 01
Development of a silver-zinc battery system
NPO-11444 B70-10718 02
Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02
Rechargeable, silver-zinc battery conditioner/monitor unit and state-of-charge indicator
M-FS-22835 B73-10486 02
- SIMULATION**
Automated validation of a computer operating system
M-FS-14510 B70-10257 09
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
Development of a silver-zinc battery system
NPO-11444 B70-10718 02
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06
Battery simulation program
NPO-11580 B71-10250 09
Soldering iron temperature indicator
NPO-11545 B72-10098 02
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01
Drive mechanism for production of simulated human breath
HQ-10777 B72-10659 05
Temperature and humidity control of simulated human breath
HQ-10778 B72-10660 05
Simulated breath waveform control
HQ-10779 B72-10661 05
Self-leveling load table
M-FS-22039 B74-10144 06
Space Ultrareliable Modular Computer (SUMC) instruction simulator
M-FS-22697 B74-10145 09
Separation dynamics of S-II derivative launch vehicle
M-FS-24325 B74-10151 06
Optical communication channel simulator system
GSFC-11877 B74-10258 01
- SIMULATORS**
A battery simulator
KSC-10172 B70-10340 01
Electronic flaw simulator for eddy current probe calibration
NUC-10211 B70-10533 01
Hydraulic actuator motion limiter ensures operator safety
ARC-10131 B71-10233 07
- Urban air pollution dispersion model
AEC-10004 B72-10003 03
Weight simulator
ARC-10100 B72-10046 05
Heart simulator
M-FS-21609 B72-10131 02
A compact spectroradiometer for solar simulator measurements
HQ-10683 B72-10327 03
Breathing-metabolic simulator
HQ-10766 B72-10657 05
Metabolic simulation chamber
HQ-10776 B72-10658 05
Dynamic power load simulator
JSC-14285 B73-10305 02
High-power ac/dc variable load simulator
MSC-14788 B75-10108 02
Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 B75-10148 05
- SIMULTANEOUS EQUATIONS**
Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
- SINE SERIES**
Multi-dimensional real Fourier transform
NPO-11648 B71-10133 09
Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
- SINE WAVES**
Waveform simulator synthesizes complex functions
NPO-10251 B70-10128 02
Burst synchronization detection system
MSC-90317 B70-10159 02
Sinusoidal-pressure generator for testing dynamic pressure probes
LEWIS-11094 B70-10352 06
Artificial-feedback system
GSFC-10324 B70-10421 02
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
New data acquisition system records bearing measurements directly
LEWIS-10510 B70-10503 06
High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
A 20 kHz power oscillator
LEWIS-11319 B71-10174 01
Determination of nonlinear resistance voltage-current relationships by measuring harmonics
M-FS-20402 B71-10182 01
Constant-amplitude, frequency-independent phase shifter
ARC-10269 B71-10230 02
Criteria for vibration testing
GSFC-10737 B71-10266 06
Improved charged-particle analyzer - A concept
XAC-05506 B71-10283 03
Waveshaping electronic circuit
M-FS-14916 B71-10429 01
Statistical measurements of the zero-crossing time of a noisy sine wave
GSFC-11004 B71-10502 02
Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05
Control of acceleration in sine/random vibration tests
NPO-11482 B72-10091 02

- Dynamic valve to supply constant total thrust to two orifice jets
ARC-10239 B72-10120 07
Nondestructive testing of microtab welds
ARC-10176 B72-10296 02
- SINGLE CRYSTALS**
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Growing single crystals in silica gel
ERC-10306 B70-10479 02
Advanced infrared photomultiplier
M-FS-20941 B72-10152 03
Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
Polishing is made cheaper by disposable diamond-impregnated abrasive cloth
MSC-14247 B72-10616 08
Single crystal tubes of beta alumina
LEWIS-11844 B73-10316 04
Increasing terminal strip efficiency at cryogenic temperatures
M-FS-23234 B75-10266 03
Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- SINGLE SIDEBAND TRANSMISSION**
Radio frequency baseband recording technique
HQ-10317 B70-10069 02
- SINGULARITY (MATHEMATICS)**
Subroutines for evaluating single and multiple integrals using modified Romberg method
NPO-11718 B71-10138 09
- SINKS**
Ultra-high molecular sink vacuum chamber
NPO-10799 B70-10130 03
Submersed sensing electrode used in fuel-cell type hydrogen detector
M-FS-14655 B71-10071 01
- SINTERING**
Growth of phase-pure, crack-free single crystals and large-grained polycrystals of molybdenum disilicide
HQ-10450 B70-10206 04
Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04
Screening method improves performance of nickel-cadmium batteries
GSFC-11260 B71-10411 04
Fabrication of large ceramic electrolyte disks
ARC-10320 B72-10202 03
Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 B72-10445 08
Humidity resistant solar cell contacts
HQ-10674 B72-10517 04
Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04
- SIPHONS**
Removal of ice and marine growth from ship surfaces: A concept
NPO-13658 B75-10282 06
- SITTING POSITION**
High mobility work station restraint support
MSC-12419 B71-10301 07
- SIZE DETERMINATION**
The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 B70-10268 03
Electro-optical device for monitoring wire size
LANGLEY-11358 B73-10321 02
Developments in spectrophotometry II: A multiple-frequency particle-size spectrometer
NPO-13606 B75-10333 03
Developments in spectrophotometry III: Multiple-field-of-view spectrometer to determine particle-size distribution and refractive index
NPO-13614 B75-10335 03
- SIZING (SHAPING)**
Low cost anti-galling bushings
LEWIS-11724 B72-10359 08
- SKEWNESS**
Optical design and analysis program
GSFC-11393 B71-10456 09
Digital tape drive monitor
GSFC-11925 B75-10153 02
- SKIDDING**
A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06
- SKIN (ANATOMY)**
An improved aesthesiometer
MSC-13609 B72-10032 05
Improved biomedical electrode
MSC-13648 B72-10642 05
Improved electrodes for skin contacts
M-FS-21926 B72-10698 05
- SKIN (STRUCTURAL MEMBER)**
Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 B70-10690 03
Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 B74-10085 04
Biaxial compression test technique
MSC-14883 B75-10319 08
- SKIN FRICTION**
Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
- SKIN TEMPERATURE (BIOLOGY)**
Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05
Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05
- SKIRTS**
Methyl alcohol used as penetrant inspection medium for porous materials
NUC-10419 B71-10103 06
- SKYLAB PROGRAM**
Viewfinder/tracking system for Skylab
MSC-14407 B75-10040 03
- SLAGS**
New materials for fireplace logs
M-FS-21363 B71-10339 04
- SLEEP**
Electronic sleep analyzer
MSC-13282 B70-10110 02
- SLEEVES**
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
Hydrostatic liquid-bearing for precision gyro
M-FS-21138 B71-10207 07
An improved aesthesiometer
MSC-13609 B72-10032 05
Combination throttle and shutoff valve
M-FS-21513 B72-10287 07
Fabrication of uniaxial filament-reinforced epoxy tubes for structural application
LANGLEY-10203 B72-10340 04
Perload indicating turnbuckle
M-FS-21488 B72-10355 07
Low cost anti-galling bushings
LEWIS-11724 B72-10359 08
Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03
- SLICING**
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04
- SLIDING**
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 B71-10173 07
Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
- SLIDING CONTACT**
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
Liquid metal porous matrix sliding electrical contact: A concept
LEWIS-11735 B73-10164 01
- SLIDING FRICTION**
Longitudinal friction forces in piping design
M-FS-13754 B72-10103 01
Scanning-electron-microscope used in real-time study of friction and wear
LEWIS-12448 B75-10064 06
- SLIP CASTING**
Reflecting heat shields made of microstructured fused silica
ARC-10949 B75-10144 04
- SLITS**
Multiedge slit for FCC
M-FS-20112 B71-10457 08
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
A tool for cutting ultra thin slits in metals
KSC-10770 B72-10433 07
Improved optical filters for automated visual inspection
HQ-10720 B72-10521 03

SLOPES

- Measurement of surface roughness slope
 LEWIS-11080 B70-10722 01
 Remote determination of sea conditions by electromagnetic backscatter measurement
 M-FS-13777 B71-10027 04
 Triangular wheel locomotion mechanism
 NPO-11366 B72-10714 06

SLOT ANTENNAS

- Improved circularly polarized antenna
 ERC-10214 B74-10250 02

SLOTS

- Vee-notch tool cuts specimens
 M-FS-20730 B70-10411 06
 Connector locking device
 KSC-10537 B70-10553 01
 Thermocouple installation in thin-walled tubes
 LEWIS-11222 B70-10655 01
 Variable-area nozzle automatically controls fluid flow
 LEWIS-11217 B71-10222 07
 Clocking connector replaces adapter cables
 M-FS-14778 B71-10423 01
 Metal-shearing energy absorber
 HQ-10638 B71-10503 07

SLURRIES

- Electrodynamic induction flowmeter
 HQ-10230 B70-10024 01
 Detonation hazards with "safe" industrial solvents
 LANGLEY-10299 B70-10404 04
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 B71-10096 05
 Improved thermal paint formulation
 M-FS-14706 B71-10180 03
 Electrodes for sealed secondary batteries
 ARC-10238 B72-10050 02
 Silver-chlorine fuel cell: A concept
 ARC-10491 B72-10221 03

SMEAR

- Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 B71-10226 02

SMOG

- Smoke generator
 LANGLEY-11433 B73-10414 06

SMOKE

- Swirl-can combustor segment
 LEWIS-11082 B70-10322 07
 Improved smoke generator for low-speed wind tunnels
 LANGLEY-10885 B71-10337 06
 Smoke generator
 LANGLEY-11433 B73-10414 06
 Visualization of smoke stack plume
 LANGLEY-11675 B74-10208 04

SMOKE ABATEMENT

- Urban air pollution dispersion model
 AEC-10004 B72-10003 03
 Airfoil disperses smokestack effluents upward
 LANGLEY-11669 B75-10074 06

SNAP 8

- High-temperature pump-motor assembly
 LEWIS-10256 B71-10100 07

SNELLS LAW

- An improved apochromatic wedge utilizing optical molecular contact bonding
 GSFC-11082 B72-10388 03

SNOW COVER

- Remote measurement of the water content of snowpacks
 ARC-10651 B72-10567 03

SOAKING

- Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
 MSC-13571 B70-10540 04
 Fabrication of large ceramic electrolyte disks
 ARC-10320 B72-10202 03

SODALITE

- A visual-display and storage device
 GSFC-10901 B72-10647 02

SODIUM

- Investigation of positive shaft seals
 M-FS-18589 B70-10176 07

SODIUM CARBONATES

- Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01

SODIUM CHLORIDES

- Superconducting "transistor" acts as high-speed switch
 HQ-10547 B70-10082 01
 Stress corrosion cracking evaluation of precipitation-hardening stainless steel
 M-FS-20667 B70-10140 04
 Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
 High-temperature "hydrostatic" extrusion
 NPO-10811 B70-10428 08
 Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
 MSC-17153 B71-10097 04
 Improved reflective coating for integrating spheres
 GSFC-10855 B71-10110 03
 Al/Cl₂ molten salt battery
 HQ-10696 B72-10527 01
 Reverse-osmosis membranes by plasma polymerization
 ARC-10696 B72-10710 04
 Integrating-sphere coating
 GSFC-11214 B73-10403 04

SODIUM COMPOUNDS

- Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Growing single crystals in silica gel
 ERC-10306 B70-10479 02
 Simple chamber facilitates chemiluminescent detection of bacteria
 LANGLEY-10705 B70-10525 05
 Rapid analytical determination of glutaraldehyde concentrations
 ARG-10413 B71-10047 05
 Accurate pointing of tungsten welding electrodes
 ARG-10449 B71-10048 08
 Covalent bonding of antibodies of polystyrene latex beads: A concept
 MSC-13906 B72-10006 05
 Catalyst for sodium chlorate decomposition
 ARC-10584 B72-10305 04
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04
 Single crystal tubes of beta alumina
 LEWIS-11844 B73-10316 04

SODIUM HYDROXIDES

- Photosensitive plastic used to produce three-dimensional casting patterns
 LANGLEY-10742 B71-10127 08
 Treatment of blueberries prior to freeze dehydration
 MSC-13573 B71-10387 05

SODIUM SALICYLATES

- Improved transmittance measurement with a magnesium oxide coated integrating sphere
 LEWIS-11840 B72-10717 04

SODIUM SILICATES

- Comparison of release torques of tightened bolts in vacuum and air
 M-FS-20773 B70-10395 06
 Molding procedure for casting a variety of alloys
 ARC-10358 B70-10512 08
 Inorganic glass ceramic slip rings
 M-FS-20711 B72-10313 04

SODIUM SULFITES

- Solvation agent for disulfide precipitates from inhibited glycol-water solutions
 MSC-13695 B71-10331 04

SOFT LANDING

- Lightweight, high-strength, reinforced plastic tube-framing die
 LANGLEY-10126 B70-10273 04
 Optimized braking of landing vehicles with atmospheric drag
 NPO-11402 B72-10084 06

SOFT LANDING SPACECRAFT

- Landing dynamics program for impact attenuating vehicles / LANDIT/
 NPO-10840 B71-10472 09

SOFTNESS

- Soft, thermally conductive material
 LANGLEY-10850 B74-10132 04

SOIL MOISTURE

- Remote estimation of soil moisture
 ARC-10867 B75-10026 03

SOIL SCIENCE

- Soil moisture by extraction and gas chromatography
 ARC-10748 B73-10503 04

SOILS

- Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 A lightweight, high output soil sampler
 NPO-10797 B71-10159 07
 Distribution and metering system for soil samples
 ARC-10429 B71-10481 07
 Phosphorus in land-water systems
 AEC-10049 B72-10429 05
 Soil moisture by extraction and gas chromatography
 ARC-10748 B73-10503 04

SOLAR ACTIVITY

- Sunspot analysis and prediction
 M-FS-21724 B72-10317 03

SOLAR ARRAYS

- Performance of silicon solar cell assemblies
 NPO-11847 B72-10186 01
 Solar array deployment from a spinning spacecraft
 ARC-10787 B74-10048 06
 Self-protecting solid state isolated switch
 LEWIS-12268 B74-10069 01

SOLAR CELLS

- Improved silicon solar cells
 LEWIS-10964 B70-10029 01

Diffusion technique for lithium-doped silicon
 GSFC-10827 B70-10148 01
 Determination of diffusion lengths in silicon by an X-ray method
 LEWIS-10984 B70-10150 01
 Nondissipative optimum charge regulator
 XGS-10439 B70-10186 01
 Voltage regulator with multiple parallel power source sections
 GSFC-10891 B70-10195 02
 Glass-to-metal bonding process improves stability and performance of semiconductor devices
 ERC-10264 B70-10477 01
 Improved cover for cadmium sulfide solar cells
 LEWIS-11003 B70-10584 01
 Silicon solar cells improved by lithium doping
 NPO-11390 B70-10585 04
 Improved protection for silicon solar cells
 LEWIS-11065 B70-10706 08
 Development of a silver-zinc battery system
 NPO-11444 B70-10718 02
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Environmental effects on silicon solar cells
 NPO-11475 B71-10282 02
 Aluminum foil interconnects for solar cell panels
 ARC-10374 B72-10058 08
 Wide angle solar sensor
 NPO-11341 B72-10080 01
 Oxygen-layer structure improves lithium-doped silicon solar cells
 NPO-11403 B72-10085 03
 Introduction of lithium into the front surface of solar cells
 NPO-11404 B72-10086 02
 Sheet plastic filters for solar cells
 NPO-11464 B72-10090 04
 High solar intensity radiometer
 LEWIS-11533 B72-10130 03
 Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 B72-10177 02
 Performance of silicon solar cell assemblies
 NPO-11847 B72-10186 01
 Solar sensor with autocollimator
 ARC-10148 B72-10192 03
 High intensity solar cell radiometer
 LEWIS-11549 B72-10480 01
 Humidity resistant solar cell contacts
 HQ-10674 B72-10517 04
 Peak-power-point monitor for solar panel
 NPO-11708 B72-10694 02
 Silicon-fiber blanket solar-cell array concept
 M-FS-22458 B73-10374 01
 Self-protecting solid state isolated switch
 LEWIS-12268 B74-10069 01
 Time-control system for communication between data-collection and orbiting
 GSFC-11182 B74-10088 02
 Efficiency increased in new solar cell: A Concept
 LANGLEY-11174 B74-10090 01
 Facility for testing solar cells
 NPO-11761 B74-10099 02

Thermoelastic analysis of solar cell arrays and their material properties
 NPO-13458 B74-10301 03
 Schottky barrier solar cell promises improved efficiency
 NPO-13482 B75-10125 03
 Zener-regulated solar array/battery power system
 M-FS-23195 B75-10162 02
 Improved photovoltaic devices, using transparent contacts
 LANGLEY-11761 B75-10220 01
 Solar-cell interconnects
 M-FS-23257 B75-10231 04
 Inexpensive pocket-size solar energy meter (insolometer)
 LEWIS-12598 B75-10283 01
 Solar power roof shingle
 LEWIS-12587 B75-10289 01
 Low-Cost thin-layer silicon solar cells
 GSFC-12023 B75-10293 04

SOLAR COLLECTORS

Wide angle solar sensor
 NPO-11341 B72-10080 01
 Solar powered absorption cycle heat pump using phase change materials for energy storage
 M-FS-21927 B72-10615 06
 Solar-energy absorber: Active infrared (IR) trap
 M-FS-22743 B73-10484 06
 Solar-energy absorber: Active infrared (IR) trap without glass
 M-FS-22744 B73-10485 06
 Selective coating for collecting solar energy on aluminum
 M-FS-22562 B73-10527 04
 Commercially available black chrome is an effective solar collector coating
 LEWIS-12159 B74-10121 04
 Remote sunfall monitor: A concept
 M-FS-22943 B74-10149 03
 Self-regenerating desiccant system
 M-FS-23057 B74-10266 07
 Flat device for heat concentration or dispersion
 LANGLEY-11699 B74-10291 03
 Survey of coatings for solar collectors
 LEWIS-12510 B75-10067 04
 Large-scale solar thermal collector concepts
 M-FS-23167 B75-10098 03
 Solar residential heating and cooling system
 M-FS-23260 B75-10165 06
 Economical solar-heating or cooling system with new solar-energy concentrators
 NPO-13497 B75-10182 03
 Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03
 Secondary reflectors for economical sun-tracking energy collection system: A concept
 NPO-13580 B75-10210 03
 Automatic solar tracker
 NPO-13630 B75-10237 03
 Low-cost hot-air solar collector
 M-FS-23272 B75-10301 08

SOLAR CONSTANT

Technique for experimental determination of radiation interchange factors in solar wavelengths
 MSC-13476 B71-10066 03

High solar intensity radiometer
 LEWIS-11533 B72-10130 03
 Quartz crystal microbalances to measure wind velocity and air humidity
 NPO-13462 B75-10124 03

SOLAR ENERGY

Heat-rejection windows for telescopes
 M-FS-20634 B70-10386 04
 Thermionic triode generates ac power
 ERC-10284 B70-10499 01
 Improved thermal paint formulation
 M-FS-14706 B71-10180 03
 Solar powered absorption cycle heat pump using phase change materials for energy storage
 M-FS-21927 B72-10615 06
 Proposed electromagnetic wave energy converter
 GSFC-11394 B73-10185 01
 Metal tube used as solar engine
 ARC-10461 B73-10493 03
 Solar-energy conversion system provides electrical power and thermal control for life-support systems
 M-FS-21628 B73-10524 06
 Selective coating for collecting solar energy on aluminum
 M-FS-22562 B73-10527 04
 Mechanical solar motor: A concept
 M-FS-23062 B74-10292 07
 Solar residential heating and cooling system
 M-FS-23260 B75-10165 06
 Economical solar-heating or cooling system with new solar-energy concentrators
 NPO-13497 B75-10182 03
 Inexpensive pocket-size solar energy meter (insolometer)
 LEWIS-12598 B75-10283 01

SOLAR ENERGY ABSORBERS

Solar-energy absorber: Active infrared (IR) trap
 M-FS-22743 B73-10484 06
 Solar-energy absorber: Active infrared (IR) trap without glass
 M-FS-22744 B73-10485 06

SOLAR FLUX

Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03

SOLAR GENERATORS

Peak-power-point monitor for solar panel
 NPO-11708 B72-10694 02
 Comparative performance of twenty-three types of flat plate solar energy collectors
 LEWIS-12511 B75-10189 03
 Solar power roof shingle
 LEWIS-12587 B75-10289 01

SOLAR HEATING

A proposed laser measurement system for determining surface contour
 HQ-10326 B70-10263 02
 Technique for experimental determination of radiation interchange factors in solar wavelengths
 MSC-13476 B71-10066 03
 Thermal analysis system /TAS-1/ program
 NPO-11849 B71-10386 09
 Phosphonium chloride for thermal storage
 ARC-10572 B72-10422 04

- Solar powered absorption cycle heat pump using phase change materials for energy storage
M-FS-21927 872-10615 06
A practical solar energy heating and cooling system
M-FS-22563 873-10156 05
Balloon-borne package temperature controller
GSFC-11620 873-10192 03
Structural heat pipe
GSFC-11619 873-10364 06
- SOLAR INSTRUMENTS**
Economical phased-array antenna for environmental applications
HQ-10434 871-10057 02
- SOLAR OBSERVATORIES**
Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 870-10577 07
- SOLAR ORBITS**
Multibody Interplanetary Swingby Trajectories /MIST-1/
M-FS-15081 870-10603 09
- SOLAR PHYSICS**
Solar experiment alignment system
ARC-10471 872-10020 03
- SOLAR POSITION**
Low-cost solar tracking system
NPO-13579 875-10209 06
- SOLAR RADIATION**
Electron energy analyzer
HQ-10373 870-10138 02
Inexpensive net solar flux radiometer
HQ-10087 870-10296 03
A 7.6m /25-ft/ extreme environments simulator
NPO-11353 871-10036 03
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 871-10066 03
Determination of radiation interchange factors
MSC-13475 871-10295 09
Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 872-10053 03
Program for determination of radiation interchange factors
MSC-17563 872-10071 09
Sheet plastic filters for solar cells
NPO-11464 872-10090 04
A compact spectroradiometer for solar simulator measurements
HQ-10683 872-10327 03
Investigation of environmental effects on coatings for thermal control
M-FS-21932 872-10596 04
A study of radiation environment in space and its biological effects
HQ-10798 872-10662 03
Ultraviolet and thermally stable polymer compositions
ARC-10592 872-10709 04
Automatic solar tracker
NPO-13630 875-10237 03
- SOLAR REFLECTORS**
Improved heat shield/radiator
NPO-11105 870-10318 03
Heat-rejection windows for telescopes
M-FS-20634 870-10386 04
Refractory porcelain enamel passive-thermal-control coating for high-temperature superalloys
M-FS-22324 873-10215 04
- Low-cost solar tracking system
NPO-13579 875-10209 06
Secondary reflectors for economical sun-tracking energy collection system: A concept
NPO-13580 875-10210 03
- SOLAR SENSORS**
Pulse-rate averaging circuit
GSFC-10718 870-10370 01
Digital aspect clock
ARC-10088 871-10440 02
Solar experiment alignment system
ARC-10471 872-10020 03
Solar sensor with autocollimator
ARC-10148 872-10192 03
Solar aspect determination system
GSFC-11444 873-10129 02
Combined sun-acquisition and sun gate-sensor system for spacecraft attitude control
NPO-13051 873-10460 02
Large-scale solar thermal collector concepts
M-FS-23167 875-10098 03
Wide-angle sun sensors
NPO-13327 875-10202 03
Low-cost solar tracking system
NPO-13579 875-10209 06
Secondary reflectors for economical sun-tracking energy collection system: A concept
NPO-13580 875-10210 03
Automatic solar tracker
NPO-13630 875-10237 03
- SOLAR SIMULATORS**
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 871-10066 03
Durable cathodes for high-power inert-gas arcs
LEWIS-11162 871-10264 03
Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 874-10011 04
A low cost "Air Mass 2" solar simulator
LEWIS-12266 874-10086 02
Facility for testing solar cells
NPO-11761 874-10099 02
Improved xenon lamp for solar simulators: A concept
NPO-13128 874-10195 03
- SOLAR SPECTRA**
A low cost "Air Mass 2" solar simulator
LEWIS-12266 874-10086 02
- SOLAR SPECTROMETERS**
Remote sunfall monitor: A concept
M-FS-22943 874-10149 03
- SOLAR SYSTEM**
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 871-10390 09
Gravitational gradiometer measures mass changes
M-FS-20814 872-10140 03
- SOLAR TEMPERATURE**
Thermal analysis system /TAS-1/ program
NPO-11849 871-10386 09
- SOLAR WIND**
General technique for measurement of refractive index variations
HQ-10359 870-10064 01
Mass separator for low velocity ions
ARC-10375 872-10123 03
- SOLAR X-RAYS**
Remote sensing X-ray spectrometer
MSC-13978 872-10016 03
- SOLDERED JOINTS**
Holographic stress analysis
M-FS-20687 870-10123 01
A new low-expansion nonflammable printed circuit board
M-FS-20408 870-10154 01
Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 870-10241 08
Improved electrical spot terminals
NPO-10034 872-10492 01
A simple, efficient resistance soldering apparatus
GSFC-10913 872-10649 08
- SOLDERING**
Economical printed circuit front panel for computer use
KSC-10573 870-10560 01
Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 871-10168 08
Hermetically sealed motion transmitter
MSC-17348 871-10328 07
Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 871-10337 06
Handling fixture for soldering round wires to FCC
M-FS-20118 871-10464 08
Electrical grounding bracket
ARC-10041 872-10045 01
Soldering iron temperature indicator
NPO-11545 872-10098 02
Humidity resistant solar cell contacts
HQ-10674 872-10517 04
A simple, efficient resistance soldering apparatus
GSFC-10913 872-10649 08
Positive contact resistance soldering unit
KSC-10242 873-10145 02
Automatic soldering machine
MSC-19401 874-10193 06
- SOLDERS**
Environmental effects on silicon solar cells
NPO-11475 871-10282 02
Pressure-probe assembly for wind tunnels
ARC-10569 872-10248 03
- SOLENOID VALVES**
Solenoid valve performance characteristics studied
M-FS-12458 870-10066 07
Electronic position indicator for latching solenoid valves
LEWIS-10926 870-10174 01
Device prepares aluminum surfaces for welding
M-FS-20750 871-10214 07
Improved plasma accelerator
ARC-10109 871-10454 03
Proportional pulsed pilot valve
ARC-10228 871-10468 07
Gas chromatograph sample-transfer valve
ARC-10427 871-10474 04
Pulse width-pulse rate modulator
ARC-10025 871-10497 01
Solenoid-operated swing-check valve
XAC-10048 872-10037 06
Gas leak-detection system
NPO-11405 872-10087 03

- Driver circuit for inductive loads
ARC-10073 B72-10268 01
A closed loop cryogenic environment
pressure regulating system
MSC-13880 B72-10390 02
Magnetic latching valve
NPO-11790 B73-10026 06
Braking action of wheeled vehicles is
controlled automatically during
minimum-distance stops
LANGLEY-11897 B75-10264 06
- SOLENOIDS**
Compact apparatus for photogeneration
of hydrated electrons
ARG-10487 B70-10036 03
High-field superconducting nested coil
magnet
ARG-10060 B70-10061 03
Post-operative cranial pressure
monitoring system
ERC-10336 B70-10436 05
High intensity heat-pulse source operates
without cooling system
ARC-10178 B70-10694 03
Multiple shutters for a stereoscopic
camera
MSC-13507 B71-10065 03
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Air lock mechanism speeds specimen
testing in high-temperature vacuum
furnaces
LANGLEY-10841 B71-10493 07
Beryllium thin films for resistor
applications
ARC-10485 B72-10021 01
A dual-beam actinic light source for
photosynthesis research
ARC-10351 B72-10205 05
Miniature high pressure regulator
ARC-10428 B72-10211 07
Ferrofluidic solenoid with axial and radial
displacement
NPO-11738 B72-10241 06
Remote control flare stack igniter for
combustible gases
M-FS-21675 B72-10352 07
Electromagnetic rheometer
ARC-10525 B72-10416 04
Magnets with stabilized conductors
HQ-10727 B72-10465 03
Sprag solenoid brake
M-FS-21846 B72-10669 06
- SOLID LUBRICANTS**
High temperature rare earth solid
lubricants
LEWIS-10983 B70-10175 04
Plating by glass-bead peening
GSFC-11163 B71-10256 08
Polyimide bonded graphite fluoride: A
new long life solid lubricant coating
LEWIS-11864 B72-10628 04
Lubrication handbook
M-FS-22326 B73-10062 04
- SOLID PHASES**
Updated, expanded, fluid properties
handbook
M-FS-21169 B71-10078 04
- SOLID PROPELLANT ROCKET ENGINES**
Design criteria monograph for pressurized
metal cases
LEWIS-11835 B72-10633 04
Design criteria monograph on solid rocket
motor igniters
LEWIS-11826 B72-10715 06
- Structural analysis of viscoelastic
materials under thermal and pressure
loading
NPO-11727 B73-10301 09
Ignition of sounding rocket motors with
hand-pumped air
LANGLEY-11152 B74-10202 03
- SOLID PROPELLANTS**
Starter propellants and auxiliary
generators for gas turbines
M-FS-18813 B70-10701 07
Monitor for physical property changes
in solid propellants
ARC-10702 B73-10130 03
- SOLID ROCKET BINDERS**
New polymer systems: Chain extension
by dianhydrides
NPO-13046 B74-10077 04
- SOLID ROCKET PROPELLANTS**
Improved epoxy resin for constructing
cryogenic filament-wound pressure
vessels
LEWIS-11261 B71-10261 04
Flame zone of a composite propellant
expanded by a laser source
LANGLEY-10660 B71-10335 03
Suppressants for lowering propellant
binder burning rate
ARC-10563 B72-10560 04
New polymer systems: Chain extension
by dianhydrides
NPO-13046 B74-10077 04
- SOLID SOLUTIONS**
Superconductor transition temperatures
study
M-FS-21247 B71-10385 03
Advances in induction-heated plasma
torch technology
LEWIS-11354 B72-10151 03
- SOLID STATE**
Solid state welding of
dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Speed enhancement of complementary
MOS devices
ARC-10387 B72-10184 01
Joining precipitation-hardened
nickel-base alloys by friction welding
LEWIS-11514 B72-10288 08
- SOLID STATE DEVICES**
High-frequency wattage-to-voltage
converter
LEWIS-10822 B70-10049 01
Improved solid state
electron-charge-storage device
HQ-10152 B70-10074 01
Passive heat transfer control
HQ-10041 B70-10111 03
Highly stable biased amplifier and
stretcher system
ARG-10354 B70-10142 01
Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
Ultrastable reference pulser for
high-resolution spectrometers
ARG-10364 B70-10216 01
P-I-N diode switch
GSFC-10661 B70-10278 01
Solid state bistable power switch
ERC-10290 B70-10383 01
Fabrication of electroacoustic RF
amplifiers
ERC-10266 B70-10460 01
Solid state variable time delay
ERC-10032 B70-10492 01
- Semiconductor cooling by thin-film
thermocouples
ERC-10149 B70-10495 01
Characteristics of step-recovery-diode
frequency multipliers
M-FS-20558 B70-10505 01
Fault detection monitor circuit provides
"self-heal capability" in electronic modules
- A concept
KSC-10394 B70-10515 01
Solid state remote circuit selector
switch
LEWIS-10387 B70-10579 01
Integrator for on-line measurement of
buffer signals
LANGLEY-10627 B70-10639 02
Brushless direct-current motor with
stationary armature and field
XGS-05290 B70-10691 02
Electronic strain-level counter
LANGLEY-10756 B70-10716 02
Active cavity radiometer, type III - An
automatic, absolute standard, highly
accurate detector
NPO-11504 B71-10131 03
High voltage lightning grounding device
LEWIS-11282 B71-10136 01
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Triangular-wave generator with
controlled sweep polarity
ARC-10332 B71-10166 03
Aircraft-crash-locating transmitter
features design improvements
M-FS-16609 B71-10213 02
Pressure transducer with four-decade
dynamic range
KSC-10384 B71-10323 01
Solid-state data interpretation system -
A concept
M-FS-20587 B71-10366 02
Simple spectroscopy used with solid
state image amplifier over wide spectral
range
M-FS-21345 B71-10378 03
RF-controlled implantable solid state
switch
ARC-10136 B71-10426 01
Miniature battery-operated
electromagnetic system for blood flow
measurements
ARC-10362 B71-10477 05
Voltage-tunable parallel-T filter for
remote operation
NPO-11165 B72-10077 01
Piezoelectric actuator uses
sequentially-excited multiple elements: A
concept
NPO-11527 B72-10096 01
Compensation of voltage drops in
solid-state switches used with
thermoelectric generators
NPO-11388 B72-10138 01
Blood pressure measurement and display
system
MSC-13036 B72-10334 05
Overlap diffusion for increasing
phototransistor dynamic range
M-FS-20407 B72-10347 01
Aluminum nitride insulating films for
MOSFET devices
NPO-11859 B72-10425 04
Wide-range nuclear magnetic resonance
detector
LEWIS-11513 B72-10478 03

Electronic integrator for gyro rate output voltages

NPO-11499 B72-10555 01
Redundancy approaches in bubble domain memories

M-FS-21915 B72-10643 01
Two-speed deflection system for electron micropattern generator

M-FS-22117 B72-10668 02
High field CdS detector for infrared radiation

LANGLEY-11027 B72-10725 04
Impulse commutating circuit with transformer to limit reapplied voltage

LEWIS-11849 B73-10004 01
Automatic quadrature control and measuring system

M-FS-21660 B73-10127 02
Solar aspect determination system

GSFC-11444 B73-10129 02
Light-direction sensor based on birefringency

NPO-11201 B73-10131 03
Signal conditioner test set

KSC-10750 B73-10189 02
Reliable low-cost battery voltage indicator for light aircraft and automobiles

LEWIS-12020 B73-10249 01
Fast recharge circuit for q-switched lasers

GSFC-11510 B73-10257 02
Frequency shifting with a solid-state switching capacitor

HQ-10812 B73-10259 01
Logic controlled solid state switchgear

LEWIS-12044 B73-10408 02
Solid-state controller

JSC-12394 B73-10466 06
High voltage solid-state relay

LEWIS-12096 B74-10006 01
Low cost instrumentation amplifier

LEWIS-12222 B74-10015 01
Improved epitaxial process for fabricating silicon carbide semiconductor devices

LEWIS-12094 B74-10017 04
Radiation hardening of metal-oxide semi-conductor (MOS) devices by boron

GSFC-11425 B74-10026 01
Self-protecting solid state isolated switch

LEWIS-12268 B74-10069 01
Thin-film temperature sensor

NPO-11775 B74-10100 01
Improved solid-state triode construction

NPO-13064 B74-10107 01
Logarithmic-function generator

ERC-10267 B74-10285 02
Sputtered gold mask for deep chemical etching of silicon

LANGLEY-11661 B75-10089 08
Solid state remote power controllers for 120 VDC power systems

LEWIS-12523 B75-10150 02
Page composer to translate binary electrical data to optical form

M-FS-22589 B75-10161 02
System for simultaneous, bidirectional data transmission

MSC-14810 B75-10171 01
Improved multiple-target sputtering equipment

NPO-13345 B75-10178 04
A two-degree Kelvin refrigerator

NPO-13459 B75-10181 03
Response of tantalum capacitors to fast transient overvoltages

MSC-14822 B75-10274 01

Formation of internally-confined semiconductor lasers

LANGLEY-11770 B75-10299 08
Microcircuit testing and fabrication, using scanning electron microscopes

M-FS-23159 B75-10304 01
Temperature-stable Gunn-diode oscillator

M-FS-23242 B75-10306 01
Solid-state motor control and monitor system

MSC-12721 B75-10316 02

SOLID STATE LASERS

High-energy lasers by using distributed reflection: A concept

NPO-13346 B75-10118 03
Tuneable diode laser spectrometer with integral grating

LANGLEY-11830 B75-10262 03

SOLID-SOLID INTERFACES

Fiber composite materials: A survey of fiber matrix interface mechanics

LEWIS-11924 B73-10007 04
Thermal contact resistance in a non-ideal joint

M-FS-21775 B73-10105 03

SOLIDIFICATION

Directionally solidified superalloy

HQ-10522 B70-10058 04
Molding procedure for casting a variety of alloys

ARC-10358 B70-10512 08
Preparation of homogeneous vitreous materials for electronic and optical devices

HQ-10670 B71-10172 04
Composite casting demonstration

M-FS-21668 B72-10266 04

SOLIDIFIED GASES

Dry ice plug for hydraulic and pneumatic pipe flushing

MSC-12548 B72-10496 06

SOLIDS

Reducing streak film data via electronic cross correlator

M-FS-18804 B70-10365 01
FEATS - Finite element thermal stress analysis of plane or axisymmetric solids

NUC-10242 B71-10038 09
Miniature grinder for solid specimens

M-FS-20005 B71-10059 05
Long-term material compatibility testing system

NPO-11776 B73-10385 04

SOLIDS FLOW

High-temperature "hydrostatic" extrusion

NPO-10811 B70-10428 08

SOLIDUS

High-temperature strength of prealloyed-powder products increased by heat/pressure treatment

LEWIS-11229 B71-10489 04

SOLUBILITY

Properties of nonaqueous electrolytes

LEWIS-11017 B70-10080 04
Solubility of non-polar gases in electrolyte solutions

LEWIS-11052 B70-10114 04
The columbium-hydrogen system and hydrogen embrittlement of columbium

M-FS-18659 B70-10146 04
High temperature rare earth solid lubricants

LEWIS-10983 B70-10175 04

Multilayer screen gives cathode ray tube high contrast

ERC-10217 B70-10454 01
Soluble high molecular weight polyimide resins

LEWIS-11056 B70-10504 04
Bacterial adenosine triphosphate as a measure of urinary tract infection

GSFC-11092 B71-10051 05
Improved wax mold technique forms complex passages in solid structures

XLA-07829 B71-10063 05
Determination of gas volume trapped in a closed fluid system

MSC-15685 B71-10094 06
Thermally stable polyimides from solutions of monomeric reactants

LEWIS-11325 B71-10442 04
Insolubilization process increases enzyme stability

ARC-10314 B71-10443 04
Initiation of polymerization by tetrabutylammonium p-lithophenoxide

ARC-10553 B72-10223 04
Insolubilized enzymes for food synthesis

ARC-10568 B72-10247 04
Method for estimating solubility parameter

NPO-11647 B73-10022 04

SOLUTES

Properties of nonaqueous electrolytes

LEWIS-11017 B70-10080 04
Solvation agent for disulfide precipitates from inhibited glycol-water solutions

MSC-13695 B71-10331 04

SOLUTIONS

Use of nonwetttable membranes for water transfer

LANGLEY-10743 B70-10235 04
Crystal growing by electrodeposition from dense gaseous solutions

NPO-10440 B70-10676 04
Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept

MSC-17153 B71-10097 04
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene

ARC-10567 B72-10419 04

SOLVENT EXTRACTION

Soluble high molecular weight polyimide resins

LEWIS-11056 B70-10504 04
A permeable rotating-wheel solvent extractor

LRL-10033 B72-10343 04
Soil moisture by extraction and gas chromatography

ARC-10748 B73-10503 04

SOLVENTS

Preparation of magnetic ferrofluids in alternative carrier liquids

GSFC-10159 B70-10011 04
Properties of nonaqueous electrolytes

LEWIS-11017 B70-10080 04
Stress corrosion crack inhibiting method for titanium

NPO-10271 B70-10129 03
Detonation hazards with "safe" industrial solvents

LANGLEY-10299 B70-10404 04
Soluble high molecular weight polyimide resins

LEWIS-11056 B70-10504 04

- Photochromism of dihydroquinolines
HQ-10574 B70-10574 04
- Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04
- Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing
M-FS-18844 B70-10645 04
- Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04
- A new metalation complex for organic synthesis and polymerization reactions
NPO-10313 B71-10210 04
- Modifications to a vacuum assisted filtering device to minimize contamination
MSC-13733 B71-10277 04
- Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04
- Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
- Development of conformal coating materials
M-FS-21393 B71-10483 04
- A method of isolating organic compounds present in water
AEC-10010 B72-10044 04
- High strength, medium density molded foam
AEC-10053 B72-10235 04
- Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04
- Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 B72-10419 04
- SONAR**
Miniature sonar fish tag
LANGLEY-11814 B75-10092 02
- SONIC NOZZLES**
Resonance tube igniter
LEWIS-11219 B70-10618 04
- SORBENTS**
Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
- Trace contaminant adsorption and sorbent regeneration in closed ecological systems
LANGLEY-10681 B72-10328 04
- Estimating sorber capacity for multiple contaminants
LANGLEY-11056 B73-10424 04
- Silver oxide sorbent for carbon dioxide
ARC-10797 B74-10053 04
- SORPTION**
Sorption vacuum trap
ERC-90051 B70-10449 06
- Trace contaminant adsorption and sorbent regeneration in closed ecological systems
LANGLEY-10681 B72-10328 04
- SOUND AMPLIFICATION**
Improved audio reproduction system
ARC-10404 B72-10059 01
- SOUND FIELDS**
Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
- Digital servo control of random sound fields
NPO-11623 B73-10297 02
- SOUND GENERATORS**
Novel wave generator adaptable to indoor surfboarding
LEWIS-11096 B70-10563 03
- Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
- SOUND INTENSITY**
Methods for measuring the loudness and noisiness of complex sounds
HQ-10332 B70-10260 03
- Evaluation of jet engine noise
M-FS-21416 B72-10263 03
- Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 B72-10579 05
- Handbook of noise ratings
LANGLEY-11799 B75-10075 03
- Portable headset microphone checker
KSC-10699 B75-10254 02
- SOUND PRESSURE**
Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 B70-10690 03
- Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
- SOUND PROPAGATION**
Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
- SOUND TRANSDUCERS**
Acoustic-emission signal-processing analog unit for locating flaws in large tanks
M-FS-24424 B73-10325 06
- Porous surface microphone for measuring acoustic signals in turbulent windstreams
ARC-10776 B73-10490 03
- SOUND TRANSMISSION**
Tone-burst technique measures high-intensity sound absorption
LANGLEY-10667 B71-10395 03
- Portable headset microphone checker
KSC-10699 B75-10254 02
- SOUND WAVES**
General technique for measurement of refractive index variations
HQ-10359 B70-10064 01
- Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
- Solid state variable time delay
ERC-10032 B70-10492 01
- Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
- Novel wave generator adaptable to indoor surfboarding
LEWIS-11096 B70-10563 03
- Piezoelectric transducer mosaic
ARC-10509 B72-10014 01
- Analytical failure determination of flow-induced fatigue in bellows
M-FS-18178 B72-10488 06
- Analysis and computer programs to calculate acoustic wave properties of baffled chambers
LEWIS-11529 B72-10577 09
- Real time statistical analysis of acoustic emission signals for flaw monitoring systems
M-FS-24402 B73-10212 03
- Gated compressor, distortionless signal limiter
NPO-11820 B73-10387 01
- Porous surface microphone for measuring acoustic signals in turbulent windstreams
ARC-10776 B73-10490 03
- Zeros of certain cross products of Bessel functions of fractional order
LEWIS-12221 B74-10012 03
- High-directivity acoustic antenna
ARC-10789 B74-10050 02
- Levitiation of objects using acoustic energy
M-FS-23261 B75-10232 03
- Sound separation probe
LEWIS-12507 B75-10286 03
- SOUNDING ROCKETS**
Adaptive position control loop
ARC-10255 B72-10052 02
- Ignition of sounding rocket motors with hand-pumped air
LANGLEY-11152 B74-10202 03
- SPACE CHARGE**
Ohmic diode
HQ-10534 B70-10200 01
- Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
LANGLEY-10630 B71-10334 01
- Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
- Cathode for use with low density gases
HQ-10687 B72-10530 01
- SPACE COMMUNICATION**
COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
- High efficiency collector for microwave tubes
LEWIS-11192 B72-10259 03
- Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
GSFC-11523 B72-10675 09
- Technique for refocusing, decompressing, and conditioning spent electron beams
LEWIS-11617 B72-10727 03
- SPACE ENVIRONMENT SIMULATION**
A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03
- Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
- Study-simulation of space station dynamics
M-FS-21227 B71-10382 09
- SPACE ERECTABLE STRUCTURES**
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
- SPACE EXPLORATION**
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
- Microwave emission from granular silicates
NPO-11702 B73-10140 03

SPACE FLIGHT

Devolatilization of polymer resins
GSFC-11358 B72-10280 04

SPACE FLIGHT FEEDING

Metabolic balance analysis program
M-FS-21237 B71-10384 09

SPACE MISSIONS

Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
Reliability analysis based on operational success criteria
ARC-10490 B72-10214 09
High intensity solar cell radiometer
LEWIS-11549 B72-10480 01
System/360 Computer Assisted Network Scheduling (CANS) System
GSFC-10909 B72-10599 09

SPACE PERCEPTION

Improved measurement of depth perception
M-FS-14133 B72-10730 05

SPACE PROBES

Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03
Toroidal equipment packaging
ARC-10828 B74-10055 03
Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04

SPACE RENDEZVOUS

Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06

SPACE SHUTTLES

Boron aluminum composite structures
M-FS-21571 B72-10386 04
Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06
Propulsion sizing program
MSC-14016 B72-10605 09
Shuttle orbiter storage locker system: A study
JSC-14448 B73-10287 08
Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 B74-10085 04

SPACE SIMULATORS

Compression springs used for vibration isolation
NPO-11012 B70-10523 07
Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Rocket plume properties measured in space simulators
NPO-11608 B73-10137 03

SPACE STATIONS

Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Study-simulation of space station dynamics
M-FS-21227 B71-10382 09

SPACE STORAGE

Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07

Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
Shuttle orbiter storage locker system: A study
JSC-14448 B73-10287 08

SPACE SUITS

Space-suit carbon dioxide absorption system: A concept
ARC-10546 B72-10168 05
Convuluted fabric for full-pressure gloves
ARC-10529 B72-10215 04
Space suit may have orthotic applications
ARC-10275 B72-10297 05
Polymer compositions suitable for use in enriched oxygen atmospheres
MSC-14618 B74-10154 04

SPACEBORNE TELESCOPES

Fine guidance for a spaceborne telescope
GSFC-11487 B73-10468 03
Viewfinder/tracking system for Skylab
MSC-14407 B75-10040 03

SPACECRAFT

Biological handbook for engineers
M-FS-20349 B70-10255 05
Solid amine compounds as sorbents for carbon dioxide: A concept
ARC-10571 B72-10421 04
Investigation of environmental effects on coatings for thermal control
M-FS-21932 B72-10596 04

SPACECRAFT ANTENNAS

Low-friction ball-and-socket
NPO-11348 B72-10081 08

SPACECRAFT CABIN ATMOSPHERES

Estimating carbon monoxide exposure
MSC-17211 B71-10319 04
Automation of Bosch reaction for CO₂ reduction
M-FS-21674 B72-10666 04
Spacecraft oxygen recovery system
ARC-10868 B74-10220 05

SPACECRAFT CABINS

High mobility work station restraint support
MSC-12419 B71-10301 07
Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
Leak detector-measurer
M-FS-21761 B73-10203 07

SPACECRAFT COMMUNICATION

Telemetry receiver
NPO-10746 B70-10008 02
Digital phase-modulation/multiplex system
NPO-11338 B70-10355 02
Deep space network
NPO-11562 B72-10043 01
Crystal-controlled multivibrator
NPO-11627 B72-10155 01
High-sensitivity receiver for CO₂ laser communications
GSFC-11455 B73-10223 02
Extended range harmonic filter
LEWIS-12064 B73-10313 02
Automatic carrier acquisition system for phase-lock-loop receivers
NPO-11628 B73-10343 02
High-power microstrip switch
NPO-11965 B73-10451 02
Time-control system for communication between data-collection and orbiting
GSFC-11182 B74-10088 02

SPACECRAFT COMPONENTS

Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 B70-10649 03
Tandem steerable running gear
M-FS-22012 B72-10499 07
PTFE films with improved flexibility
NPO-12028 B72-10551 04
Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
Fill and vent quick disconnect
M-FS-21822 B72-10645 07

SPACECRAFT CONFIGURATIONS

Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 B70-10690 03

SPACECRAFT CONSTRUCTION MATERIALS

Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 B70-10649 03
Graphite and boron-reinforced composite materials data summary
M-FS-21691 B72-10294 04

SPACECRAFT CONTAMINATION

Microbial burden prediction model program
NPO-11709 B71-10401 09

SPACECRAFT CONTROL

Improved optical lens system
NPO-11311 B70-10354 03
Closed-loop control of stochastic nonlinear systems
MSC-13858 B71-10306 09
Gas leak-detection system
NPO-11405 B72-10087 03
Ascent control analysis for S-II derivative launch vehicles, digital computer program
M-FS-24324 B73-10120 09
Solar aspect determination system
GSFC-11444 B73-10129 02
Hybrid coordinate formulation used for the design of attitude control systems for flexible spacecraft
NPO-11714 B73-10300 09
Combined sun-acquisition and sun gate-sensor system for spacecraft attitude control
NPO-13051 B73-10460 02
Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06
Design criteria monograph for actuators and operators
LEWIS-12264 B74-10061 06

SPACECRAFT DESIGN

Radiant heating concept efficient for light-transmitting windows
M-FS-20630 B70-10324 03

SPACECRAFT DOCKING

High-powered automatic latching device
MSC-15474 B70-10198 07
Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Self-leveling load table
M-FS-22039 B74-10144 06

SPACECRAFT ELECTRONIC EQUIPMENT

Proceedings of the Symposium on Long-Life Hardware for Space
M-FS-20638 B70-10649 03

- Piezoelectric actuator uses sequentially-excited multiple elements: A concept
NPO-11527 872-10096 01
- SPACECRAFT ENVIRONMENTS**
Thermal analysis system /TAS-1/ program
NPO-11849 871-10386 09
A low-altitude satellite interaction study
GSFC-11384 871-10499 09
- SPACECRAFT GUIDANCE**
The determination of stability domains for nonlinear dynamical systems
M-FS-14832 870-10539 03
Closed-loop control of stochastic nonlinear systems
MSC-13858 871-10306 09
Process for the production of star-tracking reticles
GSFC-11188 873-10488 03
- SPACECRAFT INSTRUMENTS**
Thermal-powered reciprocating pump
NPO-11417 872-10723 06
Solar array deployment from a spinning spacecraft
ARC-10787 874-10048 06
Economical technique for fragmentation testing
ARC-10792 874-10052 04
- SPACECRAFT LANDING**
Energy absorbing system for mechanical impacts
NPO-10671 872-10712 06
- SPACECRAFT LAUNCHING**
Computer program for spacecraft-booster separation spring selection, set composition, and location determination
GSFC-11616 874-10037 09
- SPACECRAFT MANEUVERS**
Optimized braking of landing vehicles with atmospheric drag
NPO-11402 872-10084 06
A general purpose maneuver turns computer program
NPO-13213 873-10088 09
- SPACECRAFT MODELS**
Criteria for vibration testing
GSFC-10737 871-10266 06
- SPACECRAFT ORBITS**
Analysis of orbital heat transfer
ARC-10844 874-10116 03
- SPACECRAFT PERFORMANCE**
Saturn S-2 base environment for flight evaluation
M-FS-16597 870-10555 09
- SPACECRAFT POWER SUPPLIES**
Development of a silver-zinc battery system
NPO-11444 870-10718 02
Battery simulation program
NPO-11580 871-10250 09
Closed-cycle power supply for fluidic control systems
ARC-10480 872-10163 06
Radioisotope thermionic power supply for spacecraft
ARC-10438 872-10212 03
Advanced high-temperature electromagnetic pump
LEWIS-11283 872-10537 07
Experimental study of flow distribution with circumferential manifolds
LEWIS-11649 872-10738 06
Design and material selection for inverter transformer cores
NPO-11726 873-10142 04
- Self-protecting solid state isolated switch
LEWIS-12268 874-10069 01
- SPACECRAFT PROPULSION**
A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 870-10648 01
Propellant-powered actuator for gas generators
ARC-10484 872-10008 03
Fluidic pressure regulators
ARC-10474 872-10162 06
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 872-10276 03
- SPACECRAFT REENTRY**
Analysis of surface ablation of noncharring materials
ARC-10223 870-10615 09
Orbit, reentry, and landing attachment for globes
LANGLEY-10626 870-10656 03
- SPACECRAFT RELIABILITY**
Reliability analysis based on operational success criteria
ARC-10490 872-10214 09
- SPACECRAFT SHIELDING**
Minimum weight meteoroid shielding determination
MSC-17017 871-10447 09
Velocity accelerator for particles
NPO-11349 872-10082 03
- SPACECRAFT STABILITY**
Improved syncom-type fluid damper
GSFC-11205 873-10478 06
- SPACECRAFT STRUCTURES**
Graphite and boron-reinforced composite materials data summary
M-FS-21691 872-10294 04
Study of high altitude plume impingement
M-FS-21414 872-10601 09
- SPACECRAFT TRACKING**
Deep space network
NPO-11562 872-10043 01
Fine guidance for a spaceborne telescope
GSFC-11487 873-10468 03
Third-order phase-locked loop receiver
NPO-11941 874-10104 02
- SPACECRAFT TRAJECTORIES**
Expanded sun-look angle program
MSC-13176 870-10602 09
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 872-10604 09
N-body U and K matrix program
LEWIS-11438 873-10012 09
Use of multivariable asymptotic expansions in a satellite theory
NPO-11750 873-10303 09
- SPACECREWS**
A computer program for evaluating propellant heating and radiation dosage to crews of nuclear-powered rocket vehicles
LEWIS-10951 870-10648 01
- SPACERS**
Open-celled polyurethane foam
KSC-10517 870-10349 04
Controlled current inductors
ERC-10139 870-10494 01
Rugged, low-conductance, heat-flow probe
MSC-13443 870-10622 03
- Advances in electrometer vacuum tube design
GSFC-10729 870-10696 01
Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 871-10079 04
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 871-10417 08
Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 871-10419 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 871-10422 08
Handling fixture for soldering round wires to FCC
M-FS-20118 871-10464 08
Hydraulic expansion process shapes large metal sheets
MSC-12432 871-10511 07
Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 872-10154 03
Cell for electrolysis of water vapor
ARC-10521 872-10166 03
Carbon dioxide concentrator
ARC-10245 872-10194 05
- SPACING**
Measuring the conductor spacing in flat conductor cables
M-FS-20560 870-10015 08
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 871-10122 09
Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 871-10226 02
Depositing spacing layers on magnetic film with liquid phase epitaxy
LANGLEY-11528 874-10262 01
- SPALLING**
Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 870-10331 08
Heat-barrier coatings for combustion chambers
M-FS-18618 870-10363 07
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 871-10394 04
Isotropic pyrolytic carbons
ARC-10532 872-10029 04
- SPARE PARTS**
Hybrid redundancy system for improving reliability - A concept
NPO-11546 871-10132 01
Limited life item management
M-FS-24020 871-10196 06
Logistics hardware and services control system
KSC-10819 873-10418 09
- SPARK GAPS**
Thermoelectric radiometer
ARC-10138 870-10056 02
High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 871-10383 03
High voltage protection network
ARC-10197 872-10119 02
Spark ultrasonic transducer
M-FS-21233 872-10594 04
- SPARK IGNITION**
Remote control flare stack igniter for combustible gases
M-FS-21675 872-10352 07

SPARK MACHINING

Fabrication techniques for
thoria-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08
Optical alignment of electrodes on
electrical discharge machines
XAC-09489 B72-10036 07

SPARK PLUGS

Remote control flare stack igniter for
combustible gases
M-FS-21675 B72-10352 07

SPATIAL DISTRIBUTION

High-speed spectrograph for shock tube
studies
ARC-10772 B73-10501 03

SPATIAL FILTERING

Holographic stress analysis
M-FS-20687 B70-10123 01
Multipass holographic interferometer
improves image resolution
HQ-10499 B70-10426 03
Sensitive holographic detection of small
aerodynamic perturbations
ARC-10422 B72-10209 03
Improved optical filters for automated
visual inspection
HQ-10720 B72-10521 03
Optical-noise suppression unit: A
concept
MSC-12640 B75-10315 03

SPECIFIC HEAT

Thermally induced oscillations in fluid
flow
M-FS-20449 B70-10299 03
Quick calculation method for fluid flow
through duct systems
M-FS-15069 B70-10487 02
Computer program for the design of
axial-flow turbines
LEWIS-11029 B70-10669 09
Computer program for natural gas flow
through nozzles
LEWIS-11534 B72-10362 09
Heat transfer correlations for kerosene
fuels and mixtures and physical properties
for Jet A fuel
LEWIS-11652 B72-10742 04
Fluidic device for measuring constituent
masses of a flowing binary gas mixture
LEWIS-11995 B73-10230 06
New method for determining
thermophysical properties of test
specimens
LANGLEY-11053 B73-10447 04

SPECIFICATIONS

Strain gage installation manual
M-FS-18822 B70-10715 06
Specification guidelines for hybrid
microcircuits
M-FS-22090 B72-10474 01
Handbook of cleaning requirements,
procedures, and verification techniques for
oxygen systems
LEWIS-11963 B73-10188 04

SPECIMENS

Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06
Accurate reassembly of small broken test
specimens
M-FS-16730 B70-10455 07
A lightweight, high output soil sampler
NPO-10797 B71-10159 07
Air lock mechanism speeds specimen
testing in high-temperature vacuum
furnaces
LANGLEY-10841 B71-10493 07

Biodegradation grinder
M-FS-22833 B73-10474 05

SPECTRA

Inexpensive, large-diameter, radar
tracking and calibration spheres
XLA-11154 B71-10190 01

SPECTRAL BANDS

Heat-rejection windows for telescopes
M-FS-20634 B70-10386 04
Direct analysis of hydrogen/deuterium
mixtures: A concept
NPO-11322 B72-10244 03
A study of the power spectral density
of an FM signal
M-FS-21070 B72-10361 02

SPECTRAL EMISSION

Neutron-image intensifier
ARG-10249 B70-10240 03
Luminescent screen composition and
apparatus
ERC-10010 B70-10440 01
Spectral emission measurement of
igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
A compact spectroradiometer for solar
simulator measurements
HQ-10683 B72-10327 03
Measurement of temperature profiles in
hot gases and flames
LEWIS-12055 B74-10060 03

SPECTRAL ENERGY DISTRIBUTION

Improved intensifying screen reduces
X-ray exposure
AEC-10090 B72-10232 03

SPECTRAL REFLECTANCE

Optical contamination during thermal
testing in vacuum
M-FS-20736 B70-10659 03

SPECTRAL RESOLUTION

Combining micro dry column
chromatography and mass spectrometry
NPO-11240 B70-10231 03
Developments in spectrophotometry I:
An instrument for high-resolution
measurements of optical intensity and
polarization
NPO-13604 B75-10332 03

SPECTROGRAMS

Multispectral infrared imaging
interferometer
MSC-12404 B71-10325 02

SPECTROMETERS

Precise audio-frequency markers for
nuclear magnetic resonance spectra
NPO-11147 B70-10086 02
New microwave spectrometer/imager
has possible applications for pollution
monitoring
NPO-10535 B70-10187 03
Ultrastable reference pulser for
high-resolution spectrometers
ARG-10364 B70-10216 01
Airborne spectrometer senses several
gases
MSC-13234 B70-10438 03
Digital decorrelator saves time and
expense in acoustic testing of structures
NPO-11542 B71-10157 03
Nondestructive testing of adhesive bonds
by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Rapid method for sampling metals for
materials identification
MSC-17332 B71-10320 04

Simple spectroscopy used with solid
state image amplifier over wide spectral
range

M-FS-21345 B71-10378 03
Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
Liquid-helium-cooled Michelson
interferometer
ARC-10554 B72-10217 03
A Compton scatter attenuation gamma
ray spectrometer
M-FS-21441 B72-10487 03
Boron-10 loaded inorganic shielding
material
M-FS-22280 B72-10740 04
Programmable random interval
generator
JSC-14131 B73-10367 02
A high-speed spectrograph shutter
HQ-10635 B73-10368 01
High-speed spectrograph for shock tube
studies
ARC-10772 B73-10501 03
Spectrometer
GSFC-11694 B74-10181 03
Transmission Oscillator Ultrasonic
Spectrometer (TOUS): A new research
instrument
LANGLEY-11735 B75-10035 03
Holographic direct-vision spectroscopy
LANGLEY-11750 B75-10090 03
Microcircuit testing and fabrication, using
scanning electron microscopes
M-FS-23159 B75-10304 01

SPECTROPHOTOMETERS

Laser wavelength selector and output
coupler
ERC-10248 B70-10507 02
Automatic amino acid analyzer
ARC-10215 B71-10165 04

SPECTROPHOTOMETRY

Developments in spectrophotometry I:
An instrument for high-resolution
measurements of optical intensity and
polarization
NPO-13604 B75-10332 03
Developments in spectrophotometry II:
A multiple-frequency particle-size
spectrometer
NPO-13606 B75-10333 03
Developments in spectrophotometry III:
Multiple-field-of-view spectrometer to
determine particle-size distribution and
refractive index
NPO-13614 B75-10335 03

SPECTRORADIOMETERS

Spectral emission measurement of
igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
A compact spectroradiometer for solar
simulator measurements
HQ-10683 B72-10327 03
Wide-field reflective scanning optical
systems
JSC-14096 B73-10279 03

SPECTROSCOPIC ANALYSIS

A program for computing shock-tube gas
dynamic properties
NPO-11068 B70-10133 09

SPECTROSCOPY

Picosecond pulse measurement by
two-photon excitation of photographic
film
ERC-10227 B70-10377 02

- Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
- Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
- Nondestructive spot tests allow rapid identification of metals
LANGLEY-10539 B70-10520 04
- Photochromism of dihydroquinolines
HQ-10574 B70-10574 04
- Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03
- Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
- Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
- Insolubilization process increases enzyme stability
ARC-10314 B71-10443 04
- Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
- A dual-beam actinic light source for photosynthesis research
ARC-10351 B72-10205 05
- A new method for the determination of thin film porosity
HQ-10673 B73-10286 01
- Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
GSFC-11860 B73-10516 03
- Infrared tunable laser: A concept
ARC-10463 B75-10081 03
- SPECTRUM ANALYSIS**
- High-resolution spectral analysis
NPO-10748 B70-10039 01
- Highly stable biased amplifier and stretcher system
ARG-10354 B70-10142 01
- Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
- A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
- Ultraviolet interferometer
HQ-10546 B71-10026 03
- Criteria for vibration testing
GSFC-10737 B71-10266 06
- Analysis of low resolution mass spectra
GSFC-11279 B71-10267 09
- On-line analysis of random vibrations
ARC-10154 B71-10284 09
- Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
- Simple spectroscope used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03
- Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06
- Lightweight, broad-band spectrum analyzer
ARC-10405 B72-10060 01
- Differential input preamplifier
ARC-10489 B72-10165 01
- Acoustic spectral analysis and testing techniques
NPO-11554 B72-10341 03
- Spectral analysis of multiple time series
M-FS-18859 B72-10614 09
- Three bit mass spectral search program
NPO-11960 B72-10747 09
- Spectral Analysis Program (SAP)
JSC-14310 B73-10227 09
- RF to digital converter
JSC-14419 B73-10306 02
- Continuous Fourier transform system
ARC-10466 B74-10170 02
- A nondispersive infrared analyzer
ARC-10631 B75-10082 03
- Multispectral data analysis: LARSYS III
MSC-14823 B75-10235 03
- SPECULAR REFLECTION**
- A new low-cost method for producing collimating mirrors
LEWIS-11553 B72-10513 08
- SPEECH**
- A real-time statistical time-series analyzer
MSC-12428 B71-10276 02
- Techniques for decoding speech phonemes and sounds: A concept
GSFC-11898 B75-10086 02
- Real-time speech analyzer
NPO-13465 B75-10205 02
- SPEECH RECOGNITION**
- Techniques for decoding speech phonemes and sounds: A concept
GSFC-11898 B75-10086 02
- Real-time speech analyzer
NPO-13465 B75-10205 02
- SPEED CONTROL**
- Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
- Two-speed wheel-drive system without lubrication
M-FS-20645 B70-10193 07
- Brushless direct-current motors
NPO-11351 B70-10234 02
- Automatic speed control of highway traffic
M-FS-21791 B73-10100 02
- Variable-frequency inverter controls torque, speed, and braking in ac induction motors
M-FS-22088 B73-10525 02
- SPEED INDICATORS**
- Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
- An inexpensive vehicle speed detector
M-FS-22601 B73-10157 02
- Small portable speed calculator
M-FS-22638 B73-10329 07
- SPEED REGULATORS**
- Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
- Controlled release of free-falling test models
NPO-11314 B70-10077 07
- Automatic speed control of highway traffic
M-FS-21791 B73-10100 02
- SPERMATOZOA**
- Reproductive cell separation: A concept
M-FS-22627 B73-10198 05
- SPHERES**
- Improved linings for integrating spheres
MSC-12237 B70-10413 03
- Water velocity meter
LANGLEY-10619 B70-10662 02
- Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03
- Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
- Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
- Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
- Machine finishes balls to high degree of roundness
M-FS-21448 B72-10595 08
- Energy absorbing system for mechanical impacts
NPO-10671 B72-10712 06
- Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 B72-10717 04
- SPHERICAL HARMONICS**
- Geometric field-line calculations
GSFC-11597 B72-10674 09
- SPHERICAL SHELLS**
- Electron energy analyzer
HQ-10373 B70-10138 02
- Integrating-sphere coating
GSFC-11214 B73-10403 04
- SPHERICAL TANKS**
- Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08
- Light-weight spherical submergence vessel
ARC-10838 B74-10114 08
- Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06
- SPHYGMOGRAPHY**
- Blood pressure measurement and display system
MSC-13036 B72-10334 05
- SPIKE POTENTIALS**
- Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
- SPIKES**
- Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
- Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
- SPIKING**
- Pseudo-saturating power converter
NPO-11368 B72-10042 01
- SPIN**
- Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
- Rotordynamic response analysis program
HQ-10579 B71-10211 09
- SPIN STABILIZATION**
- Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
- Improved syncom-type fluid damper
GSFC-11205 B73-10478 06
- Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06
- SPINDLES**
- Spool for releasing and retracting flat conductor cable
M-FS-20234 B71-10416 08
- Machine finishes balls to high degree of roundness
M-FS-21448 B72-10595 08

SPINE

Mathematical model for predicting human vertebral fracture
ARC-10691 B73-10033 05

SPIRAL WRAPPING

Strong, easy-to-mold, spiral buttress thread
LANGLEY-10755 B71-10336 08
A spiraled niobium tin superconductive ribbon
LEWIS-11726 B73-10044 04

SPIROMETERS

Metabolic breath analyzer
M-FS-21415 B71-10466 05
Balanced-bellows spirometer
XAC-01547 B72-10279 05

SPLASHING

Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06

SPLINE FUNCTIONS

Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09

SPLINES

Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
Flight tests of vortex-attenuating splines
LANGLEY-11645 B74-10187 03

SPLITTING

Glass tube splitting tool
MSC-17183 B71-10516 07
Slitting flat conductor cables with the single cutting edge splitter
M-FS-20111 B72-10575 07

SPOILERS

Integrated flight controller for light aircraft
ARC-10456 B72-10213 06

SPONGES (MATERIALS)

Viscoelastic cushion for patient support
MSC-12447 B71-10316 05
Improved biomedical electrode
MSC-13648 B72-10642 05

SPONTANEOUS COMBUSTION

Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04
Autoignition test cell with flexible atmosphere control
KSC-10198 B73-10113 04

SPOOLS

Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
Spool for releasing and retracting flat conductor cable
M-FS-20234 B71-10416 08
Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08
Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
Position sensing materials wound on a reel
GSFC-11902 B75-10249 07

SPORES

Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05

SPOT WELDS

Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01
Strain gage performance above 1033 K
M-FS-18831 B71-10225 04
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
Resistance spot welding of dispersion-strengthened nickel alloys
LEWIS-12075 B73-10315 04

SPRAY NOZZLES

Antipollution system to remove nitrogen dioxide gas
LEWIS-11297 B71-10393 04

SPRAYED COATINGS

Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
Strain compatibility tests for sprayed foam cryogenic insulation
M-FS-16063 B70-10423 04
Miniature spray-painting booth
MSC-15811 B70-10549 03
Potassium silicate-zinc oxide solution for metal finishes
GSFC-10361 B70-10600 04
Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Integrating-sphere coating
GSFC-11214 B73-10403 04
Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04

SPRAYERS

Miniature spray-painting booth
MSC-15811 B70-10549 03
Controlled droplet spray generator
LEWIS-11193 B70-10652 07
Spray momentum measuring system
MSC-12305 B71-10137 05

SPRAYING

Miniature spray-painting booth
MSC-15811 B70-10549 03
Deflection resistance indicator
M-FS-24010 B72-10401 04

SPRINGS (ELASTIC)

Dry-frictional shock absorber
NPO-11212 B70-10040 07
Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Thumb-actuated control device
ARC-10019 B70-10407 01

Foolproof quick-release locking pin
M-FS-18495 B70-10409 07
Easy insert, easy release toggle bolt fastener
ARC-10140 B70-10509 07
Compression springs used for vibration isolation
NPO-11012 B70-10523 07
Disc pack cleaning table saves computer time
LANGLEY-10590 B70-10532 09
Lightweight S-band helix antenna
KSC-10392 B70-10538 02
Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
Connector locking device
KSC-10537 B70-10553 01
Pilot-boost control valve
M-FS-20635 B70-10558 07
Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
Flexible pivot mount eliminates friction and hysteresis
M-FS-20725 B70-10577 07
Separation of two bodies in space
NPO-10663 B70-10625 09
Adjustable support spring
ARC-10203 B70-10636 07
Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
Self-sealing, easily purged quick-disconnect hose coupling
MSC-17009 B70-10699 07
Carriage-rail assembly for high-resolution mechanical positioning
M-FS-20908 B70-10714 07
Digital simulation error curves for a spring-mass-damper system
M-FS-20770 B71-10003 09
Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07
Chatter-free check valve - A concept
MSC-13262 B71-10067 07
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Predicting service life margins
M-FS-24015 B71-10194 06
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
Computer design of extension springs
M-FS-24073 B71-10473 09
Shutter design for stereoscopic camera
MSC-13613 B71-10506 03
Optical inspection tool for interior surfaces of fluid lines
M-FS-15162 B71-10513 06
Gyro spring augmentation system
ARC-10496 B72-10010 06
Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
Quick release acoustic sensor holding fixture
MSC-17457 B72-10076 02

- Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07
Simple turbine balancing test apparatus
LEWIS-11658 B72-10377 07
Deflection resistance indicator
M-FS-24010 B72-10401 04
Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01
Computer program for spacecraft-booster separation spring selection, set composition, and location determination
GSFC-11616 B74-10037 09
A band clamp with a spring toggle lever
MSC-14736 B74-10240 07
- SPUTTERING**
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Superconductor transition temperatures study
M-FS-21247 B71-10385 03
Improved electron emitter
LEWIS-10814 B71-10388 03
High-temperature, long-life thyatron
LEWIS-11327 B72-10134 01
Thermocouple tape
LEWIS-11072 B72-10515 04
Sputter etching of hemispherical bearings
HQ-10712 B72-10534 08
Fabrication of thick structures by sputtering
LEWIS-12331 B74-10126 08
Sputtered gold mask for deep chemical etching of silicon
LANGLEY-11661 B75-10089 08
Improved multiple-target sputtering equipment
NPO-13345 B75-10178 04
- SQUARE WAVES**
Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Slow-speed drives for miniature devices
NPO-10700 B70-10007 02
Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
Very high frequency digital rangine system
MSC-15763 B70-10284 02
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
Digital phase-modulation/multiplex system
NPO-11338 B70-10355 02
Transistor current and voltage limiting switch
NPO-11166 B70-10414 01
Digital demodulation with data subcarrier tracking
NPO-10858 B70-10518 02
Ac-coupled ultrahigh input impedance amplifier
LEWIS-11154 B70-10651 01
Small, efficient power supply for xenon lamps
MSC-13637 B70-10684 01
An improved telemetry system
ARC-10336 B71-10201 01
Improved relay chatter detector
NPO-10355 B71-10292 01
- Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Miniature battery-operated electromagnet system for blood flow measurements
ARC-10362 B71-10477 05
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Pulse excitation of bolometer bridges
ARC-10292 B72-10054 01
Simple non-destructive tests for electroexplosive devices
NPO-11563 B72-10315 01
New broadband square-law detector
NPO-13410 B75-10180 02
High-accuracy programable square-law detector system
NPO-13525 B75-10240 02
- SQUIBS**
Umbilical disconnect actuator
NPO-11202 B70-10170 07
Safe/armed explosive squib
XLA-10372 B70-10328 01
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Propellant-powered actuator for gas generators
ARC-10484 B72-10008 03
Squib-actuated disconnect device
NPO-11544 B72-10097 06
Squib-operated disconnect
NPO-11330 B72-10713 06
- STABILITY**
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
Wide-range pulse-height discriminator
GSFC-10837 B71-10053 01
A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01
Highly stable biased amplifier and stretcher system
ARG-10354 B70-10142 01
Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
Solid state bistable power switch
ERC-10290 B70-10383 01
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06
Absolute focus lock for microscopes
LANGLEY-10184 B70-10728 07
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Method for constructing periodic orbits in nonlinear dynamic systems
M-FS-14654 B71-10151 09
Effect of size on cracking of materials
NPO-11602 B71-10158 04
- Multiloop distributed RC active networks
ARC-10200 B71-10177 01
A pseudo random-access synchronous meteorological satellite system
GSFC-10895 B71-10220 02
Instant acting adhesive system
MSC-13732 B71-10317 04
Covalent bonding of antibodies of polystyrene latex beads: A concept
MSC-13906 B72-10006 05
Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
High strength, medium density molded foam
AEC-10053 B72-10235 04
Hybrid holographic system
M-FS-20074 B72-10260 03
Magnets with stabilized conductors
HQ-10727 B72-10465 03
Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09
Humidity resistant solar cell contacts
HQ-10674 B72-10517 04
Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06
Fast response densitometer for measuring liquid density
M-FS-14478 B72-10664 02
A stable liquid crystal for electro-optical displays
HQ-10714 B72-10746 04
Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06
Modular support blocks for fluid lines
MSC-19335 B74-10023 07
Single radial magnetic bearing: A concept
GSFC-11978 B75-10251 06
Ultraviolet hydrogen-discharge lamp
MSC-14793 B75-10272 03
- STABILITY TESTS**
Dynamic balancing of high-speed rotary machinery
HQ-10486 B70-10433 06
Performance evaluation system for inertial navigation equipment
MSC-13542 B71-10087 02
- STABILIZATION**
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Torque control system
GSFC-11077 B75-10085 06
- STABILIZED PLATFORMS**
Stable, inflatable life raft for high seas rescue operations
MSC-12393 B71-10167 05
Computer program to generate attitude error equations for a gimbal platform
M-FS-21991 B72-10624 09
- STABILIZERS (AGENTS)**
Salt stabilizer for preventing chlorine depletion and increasing shelf-life of potable water - A concept
MSC-17153 B71-10097 04
Stabilization of lactate dehydrogenase
ARC-10415 B72-10062 05
Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08

STABILIZERS (FLUID DYNAMICS)

Stable, inflatable life raft for high seas rescue operations
MSC-12393 B71-10167 05

STACKS

Exhaust cloud rise and diffusion in the atmosphere
M-FS-21119 B71-10111 03
Remote control flare stack igniter for combustible gases
M-FS-21675 B72-10352 07
Airfoil disperses smokestack effluents upward
LANGLEY-11669 B75-10074 06
Laser-excited fluorescence for measuring atmospheric pollution
NPO-13231 B75-10275 02

STAGE SEPARATION

Squib-actuated disconnect device
NPO-11544 B72-10097 06
Separation dynamics of S-II derivative launch vehicle
M-FS-24325 B74-10151 06

STAGNATION FLOW

Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09

STAGNATION POINT

Plasma conductivity gage
ARC-10147 B70-10510 03
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07

STAGNATION PRESSURE

Low pressure arc electrode
ARC-10012 B70-10329 01
A stagnation pressure probe for use in supersonic flow
LANGLEY-11139 B72-10543 06

STAINING

Silver stain for electron microscopy
ARC-10661 B72-10415 05
Automated single-slide staining system
LANGLEY-11649 B74-10188 05

STAINLESS STEELS

High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04
Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
High temperature rare earth solid lubricants
LEWIS-10983 B70-10175 04
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
Reference for radiographic film interpreters
M-FS-16695 B70-10189 03
Dopant for sodium niobate capacitor dielectric
MSC-11773 B70-10190 01
An explosion-proof battery case
MSC-12335 B70-10304 01
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01

Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 B70-10395 06

Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08

High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08

Sorption vacuum trap
ERC-90051 B70-10449 06

Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04

Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08

Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05

Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07

Improved burst disk/cutter assembly
KSC-10516 B70-10583 07

Frost as an insulator
NUC-11039 B70-10593 03

TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07

Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04

Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01

Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03

Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04

Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03

A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03

Torch kit for welding in difficult areas
MSC-15704 B71-10070 08

Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08

Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03

A lightweight, high output soil sampler
NPO-10797 B71-10159 07

Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01

Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04

Reduction of valve leakage - A concept
NPO-12003 B71-10315 07

Improved smoke generator for low-speed wind tunnels
LANGLEY-10885 B71-10337 06

Cadmium plated steel caps seal anodized aluminum fittings
M-FS-20137 B71-10355 05

Insulation assembly uses cryopumping to reduce heat transfer in cryogenic liquid line
KSC-10518 B71-10364 03

High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08

Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08

Exothermic brazing units
M-FS-21435 B71-10467 08

Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03

Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07

Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08

Heart catheter cable and connector
ARC-10406 B72-10200 05

A protective coating for stainless steel
LEWIS-11267 B72-10256 04

Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04

Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07

Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04

Magnets with stabilized conductors
HQ-10727 B72-10465 03

Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04

Precision machining of steel decahedrons
M-FS-21361 B72-10597 07

Implantable drug therapy device: A concept
NPO-11934 B72-10708 05

Filament winding technique produces strong lightweight oxygen tanks
M-FS-22470 B73-10082 08

Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04

Backflushing system rapidly cleans fluid filters
JSC-14273 B73-10405 06

Explosive welding technique for joining aluminum and steel tubes
MSC-14721 B74-10272 08

Industrial laser welding: An evaluation
M-FS-23237 B75-10267 08

Influence of heat treatment on mechanical properties of 300M steel
MSC-14792 B75-10271 04

STAMPING

Fiberglass honeycomb elements formed quickly and cheaply
LANGLEY-10125 B70-10342 08

Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01

STANDARD DEVIATION

Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02

STANDARDIZATION

Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02

Interpretation of aluminum-alloy weld radiography
M-FS-20943 B71-10206 08

- Data sampling system for monitor and control station
M-FS-20948 B71-10299 02
- Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09
- Marshall vehicle-engineering simulation system (MARVES)
M-FS-21701 B75-10199 06
- STANDARDS**
- Reference for radiographic film interpreters
M-FS-16695 B70-10189 03
- Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
- High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
- Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 B70-10333 04
- Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
- Induction brazing manual
M-FS-14924 B71-10123 08
- Subroutines for evaluating single and multiple integrals using modified Romberg method
NPO-11718 B71-10138 09
- Design criteria monograph for valve components
LEWIS-12327 B74-10087 06
- STANDING WAVES**
- Transmission Oscillator Ultrasonic Spectrometer (TOUS): A new research instrument
LANGLEY-11735 B75-10035 03
- Resonant chambers for suspending materials in air
NPO-13263 B75-10050 03
- One-dimensional multimode and multistate oscillator: A concept
HQ-10851 B75-10088 01
- Levitation of objects using acoustic energy
M-FS-23261 B75-10232 03
- STANNIDES**
- Development of superconductive magnets
LEWIS-11170 B70-10678 03
- STANTON NUMBER**
- Single-phase heat transfer improved by helical inserts in tubes
LEWIS-11063 B70-10362 07
- STAR TRACKERS**
- Improved optical lens system
NPO-11311 B70-10354 03
- Process for the production of star-tracking reticles
GSFC-11188 B73-10488 03
- Refracting lens system for low-scatter star-tracker: A Concept
MSC-14724 B75-10043 03
- STARS**
- Stellar spectrum classifier
MSC-13450 B70-10319 03
- STARTERS**
- Small, efficient power supply for xenon lamps
MSC-13637 B70-10684 01
- Saturable-reactor motor starter reduces line voltage fluctuations
M-FS-18921 B71-10013 01
- Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06
- STARTING**
- Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
- Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03
- STATE VECTORS**
- Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
- Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
- STATIC ELECTRICITY**
- Gate protective device for insulated gate field-effect transistors
M-FS-21626 B72-10149 01
- STATIC FRICTION**
- Apparatus for measuring static coefficient of friction under compressive loads
GSFC-11893 B75-10214 06
- STATIC INVERTERS**
- A simplified, compact static shift register
HQ-10723 B72-10591 02
- Design and material selection for inverter transformer cores
NPO-11726 B73-10142 04
- STATIC LOADS**
- The static nonlinear analysis of shells of revolution (SNASOR II)
JSC-14495 B73-10445 09
- STATIC PRESSURE**
- Portable vibration exciter
KSC-10069 B70-10339 07
- High amplitude sinusoidal pressure generator
LEWIS-11241 B70-10635 07
- Compact electric heater
LEWIS-11172 B70-10677 03
- Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07
- Predicting vibrational failure of flexible ducting
M-FS-16750 B71-10150 06
- Wind tunnel investigations at transonic Mach numbers
M-FS-20895 B71-10254 06
- Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06
- STATISTICAL ANALYSIS**
- Technique for Evaluating Multiple Probability Occurrences /TEMPO/
M-FS-14333 B70-10626 06
- Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 B71-10027 04
- Effect of size on cracking of materials
NPO-11602 B71-10158 04
- New understanding of fiber composite materials
NPO-11605 B71-10161 04
- Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06
- Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
- Statistical characterization of phenolic-novolac structures
ARC-10393 B71-10255 04
- A real-time statistical time-series analyzer
MSC-12428 B71-10276 02
- Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06
- Screening method improves performance of nickel-cadmium batteries
GSFC-11260 B71-10411 04
- Thermal scale modeling
M-FS-21268 B71-10432 03
- Cloud-free resolution element statistics program
GSFC-11494 B71-10463 09
- Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
- Computer program for fitting low-order polynomial splines by method of least squares
LEWIS-11651 B72-10585 09
- Program for standard statistical distributions
M-FS-21466 B72-10602 09
- Spectral analysis of multiple time series
M-FS-18859 B72-10614 09
- Real time statistical analysis of acoustic emission signals for flaw monitoring systems
M-FS-24402 B73-10212 03
- Validity test for linear error analysis
JSC-14378 B73-10219 09
- Generalized curve fit and plotting (GECAP) program
M-FS-22728 B74-10044 09
- Automated statistical analysis program (ASAP)
LANGLEY-11125 B75-10217 02
- Minimization search method for data inversion
NPO-99999 B75-10338 09
- STATISTICAL CORRELATION**
- Optical probing of supersonic aerodynamic turbulence
M-FS-20686 B70-10665 03
- Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03
- STATISTICAL DISTRIBUTIONS**
- Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
- Program for standard statistical distributions
M-FS-21466 B72-10602 09
- A comprehensive program for textual concordances and statistics
JSC-17484 B73-10049 09
- Digital random-number generator
ARC-10096 B73-10266 09
- STATISTICAL MECHANICS**
- Elements of orbit-determination theory - Textbook
NPO-11466 B71-10425 03
- Analysis of orbital heat transfer
ARC-10844 B74-10116 03
- STATISTICAL TESTS**
- Method of statistical filtering
MSC-13493 B70-10427 06

STATOR BLADES

Variables in turbine erosion
M-FS-18677 B70-10325 03

STATORS

Hall effect encoding of brushless dc motors
GSFC-10789 B70-10188 01
High-temperature electric stator
LEWIS-10889 B70-10459 01
Induction generator produces constant-frequency voltage from variable-speed drive
ERC-10065 B70-10478 02
High-temperature nickel-brazing alloy
LEWIS-10928 B70-10537 08
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
Spin vector control of a spinning space station
M-FS-21333 B71-10296 09
Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
A brushless dc spin motor for momentum exchange altitude control
M-FS-14952 B72-10448 02

STEADY FLOW

Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
Nonsteady flow-direction measurement
LEWIS-11499 B72-10403 06

STEADY STATE

FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
Inertia diaphragm pressure transducer
XAC-2981 B71-10200 05
Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03
Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09
Design and evaluation of convectively cooled nozzles
LEWIS-10894 B71-10508 09
High noise immunity one shot
ARC-10137 B72-10047 01
Comparison of catalyst activity
ARC-10493 B72-10201 04
Simple, reproducible methods for thermal shock testing of brittle materials
NUC-11020 B72-10228 06

STEADY STATE CREEP

Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09

STEAM

Variables in turbine erosion
M-FS-18677 B70-10325 03
Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
Hot tap thermowell installation
MSC-12427 B71-10302 07
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 B72-10127 03

Watertight low-cost electrical connector
LEWIS-11552 B72-10506 01
Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
Computer program for calculating water and steam properties
LEWIS-12519 B75-10187 09
Steam automobile analysis
M-FS-23188 B75-10229 03

STEAM TURBINES

Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
Turbine design review text
LEWIS-12560 B75-10287 06

STEELS

Phenolic cutter for machining foam insulation
M-FS-14170 B70-10089 07
A temperature-controlled fluid flow regulator
M-FS-14259 B70-10283 07
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08
Repair of brazed steel honeycomb-sandwich panels with vertical pins only
MSC-15831 B70-10624 08
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Strain gage installation manual
M-FS-18822 B70-10715 06
Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
Effect of size on cracking of materials
NPO-11602 B71-10158 04
Plating by glass-bead peening
GSFC-11163 B71-10256 08
Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
Metal-shearing energy absorber
HQ-10638 B71-10503 07
Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08
Experimental study of surface cracks
MSC-14032 B72-10019 04

Solenoid-operated swing-check valve
XAC-10048 B72-10037 06
Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06
New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
A tool for cutting ultra thin slits in metals
KSC-10770 B72-10433 07
Emergency-escape device
M-FS-22720 B73-10369 07
Low-Cost thin-layer silicon solar cells
GSFC-12023 B75-10293 04

STEERABLE ANTENNAS

High-directivity acoustic antenna
ARC-10789 B74-10050 02

STELLAR ROTATION

Interferometric rotation sensor
ARC-10278 B72-10274 03

STELLAR SPECTRA

Stellar spectrum classifier
MSC-13450 B70-10319 03

STELLAR SPECTROPHOTOMETRY

Improved optical lens system
NPO-11311 B70-10354 03

STELLITE (TRADEMARK)

Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04

STEP FUNCTIONS

Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
Fast peak selector for mass spectrometer
LANGLEY-10268 B71-10009 04

STEREOCHEMISTRY

Improved process for synthesizing anilinosilane compounds
M-FS-14948 B70-10105 04

STEREOPHOTOGRAPHY

Multiple shutters for a stereoscopic camera
MSC-13507 B71-10065 03
Shutter design for stereoscopic camera
MSC-13613 B71-10506 03

STEREOSCOPIC VISION

Stereoscopic computer graphics display system
M-FS-22322 B73-10526 09

STEREOTELEVISION

Stereoscopic television system
ARC-10160 B73-10499 02
Field-sequential stereo television
MSC-12616 B74-10223 03

STERILIZATION

Effects of decontamination, sterilization, and thermal vacuum on polymeric products
NPO-11250 B70-10208 04
Shelf and cycle life evaluation of silver-zinc cells
NPO-11258 B70-10214 01
Biological handbook for engineers
M-FS-20349 B70-10255 05
Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
Advances in electrometer vacuum tube design
GSFC-10729 B70-10696 01

- Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05
A silver ion water sterilization system
MSC-15734 B71-10278 04
Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
Heart catheter cable and connector
ARC-10406 B72-10200 05
Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05
Self-sterilizing polymers
M-FS-22054 B73-10090 04
- STIFFENING**
Unidirectional composite stiffening
HQ-10266 B70-10054 04
Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
Biaxial compression test technique
MSC-14883 B75-10319 08
- STIFFNESS**
Mechanical characteristics of the Bossler coupling
HQ-10508 B70-10072 07
Nonlinear damping in structures
M-FS-20701 B70-10341 03
Adjustable support spring
ARC-10203 B70-10636 07
A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 B71-10134 09
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Promising born/graphite/resin composites
M-FS-21126 B71-10217 04
Method for determining failure potential of pressure vessels
M-FS-20564 B71-10270 06
Frame modal analysis
MSC-17562 B71-10414 09
Gyro spring augmentation system
ARC-10496 B72-10010 06
Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04
Multiple reaction mass and isolation system
M-FS-24119 B72-10441 06
Program to reduce the size of structural matrices
MSC-17619 B72-10625 09
Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 B72-10749 06
Stiffness and mass matrices for shells of revolution (SAMSOR II)
JSC-14494 B73-10446 09
- STILBENE**
Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03
- STIMULATED EMISSION**
Q-switched, cavity-dumped, mode-locked laser
GSFC-11509 B73-10175 03
- STIMULATION**
An improved aesthesiometer
MSC-13609 B72-10032 05
- STIRRING**
Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06
Self-powered mixer for pressurized containers
LEWIS-12054 B73-10312 03
- STOCHASTIC PROCESSES**
Elimination of redundancy in telemetered data
HQ-10585 B70-10431 06
Remote determination of sea conditions by electroma-netic backscatter measurement
M-FS-13777 B71-10027 04
Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03
Closed-loop control of stochastic nonlinear systems
MSC-13858 B71-10306 09
- STOICHIOMETRY**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
ARG-10412 B70-10233 04
Determination of nitrogen in titanium nitride
LEWIS-11046 B70-10588 04
Resonance tube igniter
LEWIS-11219 B70-10618 04
Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04
- STOKES LAW (FLUID MECHANICS)**
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04
- STOMACH**
Sensor capsule for diagnosis of gastric disorders
HQ-10767 B72-10531 05
- STOPPING**
A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08
Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 B71-10419 08
Multiedge splitter for FCC
M-FS-20112 B71-10457 08
- STORAGE**
Polymer containing functional end groups is base for new polymers
NPO-10998 B71-10184 04
A new optical recording medium
M-FS-22348 B73-10095 03
- STORAGE BATTERIES**
Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
Electrodes for sealed secondary batteries
ARC-10238 B72-10050 02
An ampere-hour meter for batteries
M-FS-22067 B73-10118 02
- STORAGE STABILITY**
Improved reversible coulometer cell
SAN-10051 B71-10176 02
Stabilization of lactate dehydrogenase
ARC-10415 B72-10062 05
Cushion module for stowing electronic equipment
ARC-10779 B74-10073 04
High-power CW laser using hydrogen-fluorine reaction
NPO-13623 B75-10183 03
- STORAGE TANKS**
Optimizing insulation weight on cryogenic storage tanks
KSC-10399 B70-10102 03
Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03
Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
Modular construction provides large volume storage facility in minimum space
M-FS-13568 B71-10354 08
Hermetic isolation valves
ARC-10505 B72-10013 06
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
ARC-10560 B72-10278 03
Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06
Filament winding technique produces strong lightweight oxygen tanks
M-FS-22470 B73-10082 08
Self-powered mixer for pressurized containers
LEWIS-12054 B73-10312 03
Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06

STRAIN ENERGY METHODS

Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
Effect of size on cracking of materials
NPO-11602 B71-10158 04

STRAIN GAGES

Testing filamentary composites
HQ-10268 B70-10004 04
Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
A miniature 1/4-inch diameter 24-pin plug and receptacle
LANGLEY-10607 B70-10249 01
Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01
Noncontacting-optical-strain device
NPO-10778 B70-10292 03
Strain gage load measuring device - A concept
MSC-13385 B70-10326 01
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
Water velocity meter
LANGLEY-10619 B70-10662 02
Strain gage installation manual
M-FS-18822 B70-10715 06
Electronic strain-level counter
LANGLEY-10756 B70-10716 02
Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
Spray momentum measuring system
MSC-12305 B71-10137 05
Strain gage performance above 1033 K
M-FS-18831 B71-10225 04
Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01
Rising-plate rheometer
ARC-10524 B72-10026 03
Bileaf mechanical strain gage
ARC-10303 B72-10197 07
Remote weighing device
M-FS-21556 B72-10325 07
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
A monostrain test apparatus
M-FS-24221 B72-10679 06
Insulated-gate field-effect transistor strain sensor
LANGLEY-11012 B72-10731 01
A self-supporting strain transducer
LANGLEY-11263 B73-10201 06
High-temperature gas/liquid stress relaxometers
NPO-13168 B73-10457 04

Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01
Strain gauge sensitivity improved by using a composite beam
NPO-13170 B74-10297 07
High-temperature capacitive strain measurement system
FRC-10053 B75-10069 01
Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06

STRAPDOWN INERTIAL GUIDANCE

Performance evaluation system for inertial navigation equipment
MSC-13542 B71-10087 02
Precision machining of steel decahedrons
M-FS-21361 B72-10597 07

STRAPS

High mobility work station restraint support
MSC-12419 B71-10301 07
Perload indicating turnbuckle
M-FS-21488 B72-10355 07
Flat-band assembly for toroidal transformer cores
NPO-11966 B73-10391 08

STRATIFICATION

Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03

STREAMLINING

Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09

STREAMS

Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06

STRESS (PHYSIOLOGY)

Human performance measuring device
LANGLEY-10679 B70-10619 05
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

STRESS (PSYCHOLOGY)

Human performance measuring device
LANGLEY-10679 B70-10619 05

STRESS ANALYSIS

Unidirectional composite stiffening
HQ-10266 B70-10054 04
Mechanical characteristics of the Bossler coupling
HQ-10508 B70-10072 07
Holographic stress analysis
M-FS-20687 B70-10123 01
Improved mechanical remote control assembly - Concept
M-FS-16249 B70-10144 07
Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
Design and evaluation of three-phase fibrous composite structures
HQ-10267 B70-10205 04
Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
Manually operated elastomer heat pump
NPO-10677 B70-10270 03

Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
M-FS-20556 B70-10598 06
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09
Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06
Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08
Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09
Ball bearing protector
M-FS-21612 B72-10322 07
Nondestructive testing for braze voids in thin panels by use of special coatings
LANGLEY-10486 B72-10374 08
Holographic testing with a double reference beam
JSC-17959 B73-10086 03
Computer program for stress, vibration, and buckling characteristics of general shells of revolution
LANGLEY-11369 B73-10363 09
Isogrid design handbook
M-FS-22686 B73-10395 06
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
Computer program for flexible rotor dynamics analysis
LEWIS-12153 B74-10084 09
Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 B74-10186 09
Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09
Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09
Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
LEWIS-12502 B75-10138 03
RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
LEWIS-12388 B75-10186 09
Read-only optical storage medium
M-FS-23169 B75-10305 03

STRESS CONCENTRATION

Strain gage load measuring device - A concept
MSC-13385 B70-10326 01
Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 B70-10394 06
Foolproof quick-release locking pin
M-FS-18495 B70-10409 07
Strain compatibility tests for sprayed foam cryogenic insulation
M-FS-16063 B70-10423 04

- The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 870-10527 04
- Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 870-10621 04
- Improvement of adhesive-bonded structural joints
M-FS-20876 870-10663 08
- New understanding of fiber composite materials
NPO-11605 871-10161 04
- Interpretation of aluminum-alloy weld radiography
M-FS-20943 871-10206 08
- Isogrid structure
M-FS-21567 872-10323 06
- STRESS CORROSION**
- Stress corrosion crack inhibiting method for titanium
NPO-10271 870-10129 03
- Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 870-10140 04
- Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 870-10241 08
- Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 870-10369 04
- Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 870-10396 04
- Accurate reassembly of small broken test specimens
M-FS-16730 870-10455 07
- Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 870-10506 04
- The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 870-10527 04
- Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
M-FS-21113 872-10321 04
- Probability of stress-corrosion fracture under random loading
NPO-13113 873-10453 04
- Aluminum alloys with improved strength
M-FS-23239 875-10200 04
- STRESS MEASUREMENT**
- Tensile creep-rate of pyrolytic carbon
NPO-11254 870-10100 04
- Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 871-10413 09
- Bileaf mechanical strain gage
ARC-10303 872-10197 07
- High-temperature gas/liquid stress relaxometers
NPO-13168 873-10457 04
- Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 874-10238 06
- High-temperature capacitive strain measurement system
FRC-10053 875-10069 01
- STRESS RATIO**
- Accumulative weights program
M-FS-15066 871-10181 09
- Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 872-10339 04
- STRESS RELAXATION**
- Improved high-temperature gimbal joint
LEWIS-11705 872-10489 06
- High-temperature gas/liquid stress relaxometers
NPO-13168 873-10457 04
- STRESS RELIEVING**
- A proposed laser measurement system for determining surface contour
HQ-10326 870-10263 02
- Flat conductor cable connector with contact separation seal
M-FS-20757 870-10387 01
- Process for producing molybdenum foil and collapsible tubing
GSFC-10008 871-10073 08
- Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 872-10258 06
- High temperature permeameter for measuring magnetic properties
LEWIS-11609 872-10443 03
- STRESS WAVES**
- Probe for measuring turbulent real-time shear-stress waves
ARC-10755 874-10072 03
- STRESS-STRAIN-TIME RELATIONS**
- Accelerated battery-life testing - A concept
GSFC-11085 871-10348 06
- Dynamic testing of complex structures
JSC-12569 873-10057 06
- STRESSED-SKIN STRUCTURES**
- Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 870-10243 04
- STRESSES**
- A new low-expansion nonflammable printed circuit board
M-FS-20408 870-10154 01
- Foolproof quick-release locking pin
M-FS-18495 870-10409 07
- Vee-notch tool cuts specimens
M-FS-20730 870-10411 06
- Special wrench for B-nuts reduces torque stress in tubing
MSC-15885 870-10550 07
- Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 870-10582 06
- High-strength magnetic materials
LEWIS-10697 870-10596 03
- Improved method for cladding the inside of metal tubes
LEWIS-11174 870-10723 08
- High density electronic packaging module with improved cooling assembly
MSC-13639 871-10088 01
- Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 871-10173 07
- Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 871-10268 08
- Method for determining failure potential of pressure vessels
M-FS-20564 871-10270 06
- Structural behavior of tapered inflated fabric cylinders under various loading conditions
MSC-15317 871-10327 06
- Combined high vacuum/high frequency fatigue tester
LEWIS-11210 871-10405 06
- Design and evaluation of convectively cooled nozzles
LEWIS-10894 871-10508 09
- Weight simulator
ARC-10100 872-10046 05
- STRETCHERS**
- Inflatable stretcher to transport patients
HQ-10179 870-10254 05
- STRETCHING**
- Manually operated elastomer heat pump
NPO-10677 870-10270 03
- Ultra-flexible biomedical electrodes and wires
ARC-10268 870-10420 05
- Apparatus for heat treating plastic belts
NPO-13205 874-10299 02
- STRIATION**
- Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 875-10195 01
- Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 875-10196 01
- STRINGERS**
- Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 870-10394 06
- STRIP TRANSMISSION LINES**
- Improved modified turnstile antenna
MSC-12209 870-10482 01
- STRIPPING**
- New method for photoresist stripping
ERC-10239 870-10497 04
- Hobel stripper for shielded and unshielded flat conductor cable
M-FS-20120 871-10060 08
- STRIPPING (DISTILLATION)**
- Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 871-10420 08
- Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 872-10445 08
- STROBOSCOPES**
- Kaleidoscopic light feedback for television systems
MSC-12386 871-10068 03
- Noncontact torque measurement using stroboscopic techniques
MSC-12282 872-10332 07
- STRONTIUM TITANATES**
- Ohmic diode
HQ-10534 870-10200 01
- Temperature-independent resistor for microelectronic circuits
HQ-10382 870-10276 01
- STROUHAL NUMBER**
- Study of fluid flow by charged particles
ARC-10925 875-10028 03
- STRUCTURAL ANALYSIS**
- Testing filamentary composites
HQ-10268 870-10004 04
- Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
NPO-11069 870-10067 09
- Nonlinear damping in structures
M-FS-20701 870-10341 03
- Tracking antenna deformation program
GSFC-11191 871-10017 09
- Thermal and structural modeling of superinsulation
M-FS-20324 871-10019 02
- Vibration detection using lasers
ARC-10389 871-10145 03

Accumulative weights program
M-FS-15066 B71-10181 09

Numerical integration of second order differential equations
M-FS-20536 B71-10186 09

Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06

Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06

Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04

NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09

Structural behavior of tapered inflated fabric cylinders under various loading conditions
MSC-15317 B71-10327 06

Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09

Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 B71-10492 09

Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06

Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04

Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09

Electromagnetic rheometer
ARC-10525 B72-10416 04

Vibrational transfer functions for complex structures
M-FS-20744 B72-10648 09

Computer program for transient response of structural rings subjected to fragment impact
LEWIS-11926 B73-10064 09

Automated Shell Theory for Rotating Structures (ASTROS)
M-FS-21970 B73-10115 09

Node-recording method for stiffness matrix wavefront reduction in structural analysis
NPO-11620 B73-10296 09

Structural analysis of viscoelastic materials under thermal and pressure loading
NPO-11727 B73-10301 09

Acoustic-emission signal-processing analog unit for locating flaws in large tanks
M-FS-24424 B73-10325 06

Variable load indicator
M-FS-21728 B73-10335 07

Computer program for stress, vibration, and buckling characteristics of general shells of revolution
LANGLEY-11369 B73-10363 09

Improved procedures for mass matrix-reductions in eigenvalue solutions
NPO-11619 B73-10384 09

Suppression of bending motion in elastic bodies
XAC-05632 B74-10070 06

Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09

Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
LANGLEY-11533 B74-10204 09

Computer program for numerical analysis of stiffened shells of revolution
M-FS-23027 B75-10094 09

Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09

RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
LEWIS-12388 B75-10186 09

Static aeroelastic program
LANGLEY-11602 B75-10298 06

STRUCTURAL DESIGN

Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 B70-10348 07

Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06

Repair of brazed steel honeycomb-sandwich panels with vertical pins only
MSC-15831 B70-10624 08

A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06

Method for determining failure potential of pressure vessels
M-FS-20564 B71-10270 06

Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03

Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09

Axisymmetric and cylindrical isostable structures - A concept
NPO-12049 B71-10446 06

Techniques for improving reliability of computers
M-FS-21326 B72-10109 02

A cryopump for cooling objects at a distance
LRL-10031 B72-10314 03

Isogrid structure
M-FS-21567 B72-10323 06

A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04

Guidelines for fabrication of hybrid microcircuits
M-FS-21964 B72-10393 01

Isogrid design handbook
M-FS-22686 B73-10395 06

Data summary and computer program for axial-flow pump rotor performance
LEWIS-11920 B74-10127 09

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09

Design criteria monograph for valve assemblies
LEWIS-12332 B74-10227 06

Design criteria monograph on centrifugal flow turbopumps
LEWIS-12346 B74-10228 06

Fracture toughness testing data: A technology survey and bibliography
LEWIS-12503 B75-10139 03

Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03

Turbine design review text
LEWIS-12560 B75-10287 06

STRUCTURAL DESIGN CRITERIA

Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04

Design criteria monograph for pressurized metal cases
LEWIS-11835 B72-10633 04

Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08

STRUCTURAL ENGINEERING

Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09

Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08

Ultrasonic detection of flaws in large structural areas
MSC-19499 B75-10201 06

Process for preparing polyimide adhesives
LANGLEY-11397 B75-10257 08

STRUCTURAL FAILURE

Evaluation of two designs for cryogenic insulation
M-FS-14740 B70-10415 03

X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07

Minimum weight meteoroid shielding determination
MSC-17017 B71-10447 09

Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 B72-10407 06

Probability of stress-corrosion fracture under random loading
NPO-13113 B73-10453 04

STRUCTURAL MEMBERS

Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07

Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03

Strain gage load measuring device - A concept
MSC-13385 B70-10326 01

Fabricating subscale components for application to full-scale parts
M-FS-20805 B70-10390 07

Analysis of multilayered fiber composites
LEWIS-11347 B71-10372 09

Axisymmetric and cylindrical isostable structures - A concept
NPO-12049 B71-10446 06

Structural heat pipe
GSFC-11619 B73-10364 06

Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06

STRUCTURAL RELIABILITY

Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06

- Standards for material handling and facilities equipment proofload testing
MSC-15788 B70-10526 07
- Optimization of structures on the basis of fracture mechanics and reliability criteria
NPO-11645 B73-10276 06
- Lightweight, high speed bearing balls:
A concept
LEWIS-11087 B74-10013 06
- Guidebook of nondestructive evaluation techniques for materials and structures
LEWIS-12272 B74-10122 04
- STRUCTURAL STABILITY**
- Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
- Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
- Adjustable support spring
ARC-10203 B70-10636 07
- Axisymmetric and cylindrical isostable structures - A concept
NPO-12049 B71-10446 06
- Experimental study of surface cracks
MSC-14032 B72-10019 04
- Strengthening lightweight concrete
AEC-10017 B72-10430 04
- Modular support blocks for fluid lines
MSC-19335 B74-10023 07
- Light-weight spherical submergence vessel
ARC-10838 B74-10114 08
- Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06
- Laminating cored, stressed-face, sandwich structures
XLA-11028 B74-10233 06
- Improved circuit-board interconnectors
MSC-12661 B74-10239 01
- Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04
- STRUCTURAL STRAIN**
- Testing filamentary composites
HQ-10268 B70-10004 04
- Hoop restraint on beam-column behavior in a stiffened cylindrical shell
M-FS-16172 B70-10394 06
- Electronic strain-level counter
LANGLEY-10756 B70-10716 02
- Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 B71-10189 06
- A self-supporting strain transducer
LANGLEY-11263 B73-10201 06
- Creep-fatigue analysis by Strainrange Partitioning
LEWIS-12072 B73-10314 04
- Welding high-strength aluminum alloys
M-FS-22918 B73-10481 04
- Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04
- STRUCTURAL VIBRATION**
- Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
- Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06
- Snap dynamics
M-FS-21531 B72-10265 09
- Spectral analysis of multiple time series
M-FS-18859 B72-10614 09
- Vibration measurement by pulse differential holographic interferometry
LANGLEY-11092 B73-10075 03
- Analysis of nonlinear vibrations of cylinders
NPO-11736 B73-10302 09
- Dynamic transformation method
M-FS-22848 B74-10076 06
- STRUCTURAL WEIGHT**
- Optimum structural design based on reliability analysis
NPO-11261 B70-10399 06
- STRUTS**
- Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06
- Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 B73-10258 08
- Boron-epoxy tubular structure members
ARC-10737 B73-10265 08
- Expandable space frames
ERC-10365 B74-10252 06
- STUDS (STRUCTURAL MEMBERS)**
- Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08
- Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
- STYRENES**
- Photoemissive coating
M-FS-22003 B72-10638 08
- STYROFOAM (TRADEMARK)**
- Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03
- Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
- SUBASSEMBLIES**
- Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01
- Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
- SUBAUDIBLE FREQUENCIES**
- Low-frequency triangular wave generator
ARC-10259 B71-10469 01
- SUBGROUPS**
- Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09
- SUBLIMATION**
- Ultra-high molecular sink vacuum chamber
NPO-10799 B70-10130 03
- Analysis of surface ablation of noncharring materials
ARC-10223 B70-10615 09
- Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
- SUBMARINES**
- High-powered automatic latching device
MSC-15474 B70-10198 07
- Solid amine compounds as sorbents for carbon dioxide: A concept
ARC-10571 B72-10421 04
- SUBMERGING**
- Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
- Water impact loads
M-FS-21955 B72-10621 09
- SUBMINIATURIZATION**
- Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
- Subminiature micropower digital recorder
ARC-10746 B73-10491 02
- Subminiature transducers for measuring forces and deformation of heart muscle
NPO-13423 B75-10051 05
- SUBREFLECTORS**
- Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06
- Variable-beamwidth antennas
GSFC-11760 B74-10041 02
- SUBROUTINES**
- COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09
- Multi-dimensional real Fourier transform
NPO-11648 B71-10133 09
- Subroutines for evaluating single and multiple integrals using modified Romberg method
NPO-11718 B71-10138 09
- Variable order integrators for the numerical solution of ordinary differential equations
NPO-11643 B71-10248 09
- Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- Computer program for natural gas flow through nozzles
LEWIS-11534 B72-10362 09
- Analytic procedures for determining dimensional redundancies in electronic devices
HQ-10709 B72-10656 09
- Geometric field-line calculations
GSFC-11597 B72-10674 09
- FORTTRAN program for generating a two-dimensional orthogonal mesh between two arbitrary boundaries
LEWIS-11863 B72-10753 09
- SUBSONIC FLOW**
- Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
- Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03
- Simplified computation of compressible fluid flow parameters
KSC-10400 B70-10225 06
- Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
- Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
- Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
- A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
- A stagnation pressure probe for use in supersonic flow
LANGLEY-11139 B72-10543 06

- Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds
 LANGLEY-11249 873-10184 06
 Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow
 LANGLEY-11305 873-10470 06
 Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
 LANGLEY-11175 874-10091 06
- SUBSONIC SPEED**
 Short-duration, transonic flow, variable-porosity test section
 M-FS-20509 870-10256 03
 Design procedure for low-drag subsonic airfoils
 LANGLEY-11351 875-10256 03
- SUBSTITUTES**
 Core drill's bit is replaceable without withdrawal of drill stem - A concept
 M-FS-20819 870-10391 07
- SUBSTRATES**
 Tensile creep-rate of pyrolytic carbon
 NPO-11254 870-10100 04
 Inorganic bonding of semiconductor strain gages
 GSFC-10833 870-10215 08
 Growth of single-crystal gallium nitride
 ERC-10301 870-10473 03
 New method for photoresist stripping
 ERC-10239 870-10497 04
 High-temperature oxidation and erosion-resistant refractory coatings
 LEWIS-11221 870-10634 04
 Oxidation-resistant coatings for refractory metals used in inert atmospheres
 NPO-11477 870-10674 04
 Composite metal-oxide device has voltage sensitive capacitance
 HQ-10594 870-10687 01
 Improved reflective coating for integrating spheres
 GSFC-10855 871-10110 03
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 871-10199 08
 Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 871-10212 08
 Low-temperature bonding of temperature-resistant electronic connections
 M-FS-20909 871-10253 08
 Plating by glass-bead peening
 GSFC-11163 871-10256 08
 Improved brazing technique for pyrolytic graphite
 NPO-12026 871-10293 08
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 871-10298 02
 Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 871-10303 04
 A study of nitride devices for computer memory applications
 M-FS-20971 871-10350 03
 Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 871-10359 04
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 871-10368 01
- Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
 GSFC-10835 871-10375 08
 Simple spectroscopy used with solid state image amplifier over wide spectral range
 M-FS-21345 871-10378 03
 Superconductor transition temperatures study
 M-FS-21247 871-10385 03
 High-strength large-diameter carbon-base fibers
 LEWIS-11167 871-10403 04
 Screening method improves performance of nickel-cadmium batteries
 GSFC-11260 871-10411 04
 Piezoelectric transducer mosaic
 ARC-10509 872-10014 01
 Beryllium thin films for resistor applications
 ARC-10485 872-10021 01
 Isotropic pyrolytic carbons
 ARC-10532 872-10029 04
 Piezoelectric actuator uses sequentially-excited multiple elements: A concept
 NPO-11527 872-10096 01
 Gate protective device for insulated gate field-effect transistors
 M-FS-21626 872-10149 01
 Flexible, low-cost silicon solar cell arrays
 LEWIS-11069 872-10177 02
 Solar sensor with autocollimator
 ARC-10148 872-10192 03
 GaAs transistors formed by Be or Mg ion implantation
 LANGLEY-11204 873-10442 01
 Vapor-deposited platinum as a fuel-cell catalyst
 M-FS-21317 873-10475 04
 Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
 GSFC-11860 873-10516 03
 Selective coating for collecting solar energy on aluminum
 M-FS-22562 873-10527 04
 A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
 LANGLEY-11536 874-10234 01
 Bubble-domain circuit wafer evaluation coil set
 LANGLEY-11728 875-10197 01
 Low-Cost thin-layer silicon solar cells
 GSFC-12023 875-10293 04
- SUBSTRUCTURES**
 Nonlinear damping in structures
 M-FS-20701 870-10341 03
 Qualifications and certification of nondestructive testing personnel
 M-FS-20850 871-10271 06
 Viscoelastic cushion for patient support
 MSC-12447 871-10316 05
 Frame modal analysis
 MSC-17562 871-10414 09
- SUCTION**
 Twin-spool turbopumps for "low" net positive suction pressure operations
 LEWIS-11105 870-10671 07
 An investigation of tandem-row, high-head pump inducers
 M-FS-21139 871-10152 07
- Computing incompressible laminar and turbulent boundary layer formation
 LEWIS-11190 871-10155 09
 Improved method for calculating pump thermodynamic suppression head
 M-FS-20852 871-10239 07
- SUITS**
 Sterile chamber operation with bio-isolator suit system
 LANGLEY-11054 872-10547 05
- SULFATES**
 Stress corrosion crack inhibiting method for titanium
 NPO-10271 870-10129 03
 Analytical methods for bacterial kinetics studies
 LRL-10011 871-10192 05
- SULFITES**
 Rapid analytical determination of glutaraldehyde concentrations
 ARG-10413 871-10047 05
- SULFONES**
 Water electrolysis module
 ARC-10246 871-10203 03
- SULFUR OXIDES**
 Airborne spectrometer senses several gases
 MSC-13234 870-10438 03
 Intumescent coatings as fire retardants
 ARC-10099 870-10450 04
 Urban air pollution dispersion model
 AEC-10004 872-10003 03
 Fluidized-bed combustion reduces atmospheric pollutants
 AEC-10085 872-10431 04
- SULFURIC ACID**
 Colorimetric detection of ethylene glycol vapor
 MSC-13222 870-10031 03
 Intumescent coatings as fire retardants
 ARC-10099 870-10450 04
 Improved reversible coulometer cell
 SAN-10051 871-10176 02
 Cell for electrolysis of water vapor
 ARC-10521 872-10166 03
- SUMMARIES**
 Superconducting quantum-interference devices
 M-FS-23163 875-10097 03
 Design criteria monograph on turbopump systems
 LEWIS-12499 875-10135 06
 Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
 LEWIS-12502 875-10138 03
 Fracture toughness testing data: A technology survey and bibliography
 LEWIS-12503 875-10139 03
- SUMPS**
 Antipollution system to remove nitrogen dioxide gas
 LEWIS-11297 871-10393 04
 Cavitating Venturi sump
 ARC-10504 872-10012 06
- SUMS**
 High efficiency telemetry method
 NPO-10388 871-10371 02
 Low cost, logarithmic mass flow computer
 LEWIS-11001 871-10407 06
- SUN**
 Expanded sun-look angle program
 MSC-13176 870-10602 09
 Solar sensor with autocollimator
 ARC-10148 872-10192 03

SUNSPOT CYCLE

Sunspot analysis and prediction
M-FS-21724 B72-10317 03

SUPERCHARGERS

Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09

SUPERCONDUCTING MAGNETS

High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Low temperature uses of helium
LEWIS-11171 B70-10673 03
Development of superconductive magnets
LEWIS-11170 B70-10678 03
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
Magnets with stabilized conductors
HQ-10727 B72-10465 03
Improved thermal isolation for superconducting magnet systems
NPO-11875 B74-10158 02
Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02

SUPERCONDUCTIVITY

Stranded superconducting cable of improved design
ARG-90108 B70-10070 01
Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01
Low temperature uses of helium
LEWIS-11171 B70-10673 03
Unique intermetallic compounds prepared by shock wave synthesis
M-FS-20861 B71-10216 04

SUPERCONDUCTORS

Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
Superconductor transition temperatures study
M-FS-21247 B71-10385 03
New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
Control of oscillations in a discharge circuit
ARC-10556 B72-10304 01
Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03
Magnets with stabilized conductors
HQ-10727 B72-10465 03
A spiraled niobium tin superconductive ribbon
LEWIS-11726 B73-10044 04
Superconducting quantum-interference devices
M-FS-23163 B75-10097 03
Microelectronic fabrication of superconducting devices and circuits
NPO-13419 B75-10120 01
A two-degree Kelvin refrigerator
NPO-13459 B75-10181 03

SUPERCOOLING

Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
LEWIS-11574 B72-10330 06
Phase-change materials handbook
M-FS-22064 B72-10464 04

SUPercritical FLOW

Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06

SUPERFLUIDITY

High-energy lasers by using distributed reflection: A concept
NPO-13346 B75-10118 03

SUPERHEATING

Using permeable membranes to produce hydrogen and oxygen from water
MSC-12600 B75-10314 04

SUPERHETERODYNE RECEIVERS

Block-coded communications
NPO-11397 B70-10242 02

SUPERHIGH FREQUENCIES

A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
Lightweight S-band helix antenna
KSC-10392 B70-10538 02
Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
Accurate measurement of telemetry performance
NPO-11457 B72-10089 02

Pre-emphasis determination for an S-band constant bandwidth FM/FM station
M-FS-22135 B73-10170 02

Circularly-polarized multiband telemetry tracking antenna
NPO-11264 B73-10288 02
Improved masers for X-band and Ku band
NPO-11437 B73-10293 02
Dual-band ridged waveguide
LANGLEY-11781 B75-10091 01

SUPERSATURATION

Variables in turbine erosion
M-FS-18677 B70-10325 03

SUPersonic AIRCRAFT

Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Evaluation of jet engine noise
M-FS-21416 B72-10263 03

SUPersonic BOUNDARY LAYERS

Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03

SUPersonic FLIGHT

Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09
Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds
LANGLEY-11250 B73-10183 06

SUPersonic FLOW

Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09

Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03

Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06

Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09

Condensation of wet vapors in turbines
NPO-10773 B70-10613 09

Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09

A stagnation pressure probe for use in supersonic flow
LANGLEY-11139 B72-10543 06

Study of high altitude plume impingement
M-FS-21414 B72-10601 09

Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow
LANGLEY-11305 B73-10470 06

Laser velocimeter measurements of high-speed compressible flows
ARC-10781 B75-10141 03

SUPersonic JET FLOW

Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03

Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09

SUPersonic NOZZLES

Low pressure arc electrode
ARC-10012 B70-10329 01
Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
LEWIS-11636 B72-10070 09

SUPersonic SPEEDS

Short-duration, transonic flow, variable-porosity test section
M-FS-20509 B70-10256 03

Jettisoning system for a parachute's canister
NPO-11236 B70-10398 06

Optical probing of supersonic aerodynamic turbulence
M-FS-20686 B70-10665 03

Continuous-flow variable-density wind tunnel facilities
NPO-11287 B72-10078 06

Mislift and miss-drag programs
LANGLEY-10932 B72-10153 09

Evaluation of jet engine noise
M-FS-21416 B72-10263 03

Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03

SUPersonic TRANSPORTS

Traffic control system and method
GSFC-10087 B74-10024 02

Low-profile landing-gear assembly
ARC-10786 B75-10055 06

SUPERSONIC TURBINES

Integrated turbine-compressor provides air flow for cooling
 HQ-10442 870-10295 07
 Mechanical coupling for high cyclic loading
 LEWIS-11690 874-10001 06
 Turbine design review text
 LEWIS-12560 875-10287 06

SUPERSONIC WIND TUNNELS

Continuous-flow variable-density wind tunnel facilities
 NPO-11287 872-10078 06
 A stagnation pressure probe for use in supersonic flow
 LANGLEY-11139 872-10543 06

SUPINE POSITION

High mobility work station restraint support
 MSC-12419 871-10301 07

SUPPORT SYSTEMS

Turbopump radial and axial rotor support system
 M-FS-21495 872-10264 07

SUPPORTS

Tandem wheel drop-legs for standard truck trailer
 M-FS-13466 870-10088 07
 Development of lightweight cryogenic tank supports
 M-FS-20726 870-10291 07
 Low heat-gain cryogenic-liquid transfer system
 MSC-15165 870-10306 07
 Disc pack cleaning table saves computer time
 LANGLEY-10590 870-10532 09
 Support for equipment - Quick mounting with quick release
 MSC-15874 870-10542 07
 Easy manual operation of overhead garage doors - A concept
 KSC-10555 870-10543 07
 Safe suspension of specimens or clusters during dynamic testing - A concept
 M-FS-15110 870-10559 07
 Flexible pivot mount eliminates friction and hysteresis
 M-FS-20725 870-10577 07
 Adjustable support spring
 ARC-10203 870-10636 07
 Wide-angle, circularly polarized, omnidirectional-array antenna
 GSFC-10928 871-10033 01
 Zero-g simulation system for therapeutic application
 M-FS-14671 871-10034 04
 Pipe installation technique avoids disturbing work areas
 MSC-15581 871-10093 06
 Multimode ergometer system
 M-FS-21044 871-10107 05
 Low-cost quasi-parabolic antenna
 LEWIS-11291 871-10121 01
 Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 871-10226 02
 Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 871-10247 08
 High mobility work station restraint support
 MSC-12419 871-10301 07
 Viscoelastic cushion for patient support
 MSC-12447 871-10316 05

Position indicating, rotating boom
 LANGLEY-11202 872-10066 07
 Low-friction ball-and-socket
 NPO-11348 872-10081 08
 Ball bearing protector
 M-FS-21612 872-10322 07
 Restraint and locomotion aid
 ARC-10153 872-10558 06
 A flexible cruciform journal bearing mount
 LEWIS-11035 873-10001 07
 Modular support blocks for fluid lines
 MSC-19335 874-10023 07
 Expandable space frames
 ERC-10365 874-10252 06

SUPPRESSORS

Improved method for calculating pump thermodynamic suppression head
 M-FS-20852 871-10239 07

SURFACE CRACKS

A method for obtaining high ductility in critical areas of aluminum castings
 M-FS-18705 870-10121 08
 Potassium silicate-zinc oxide solution for metal finishes
 GSFC-10361 870-10600 04
 Improved fire-resistant coatings
 GSFC-10072 871-10198 04
 Method for determining failure potential of pressure vessels
 M-FS-20564 871-10270 06
 Experimental study of surface cracks
 MSC-14032 872-10019 04
 Detection of cracks in surface insulation
 MSC-14187 874-10095 04
 In-service turbine wheel crack monitor
 LEWIS-12422 875-10012 02

SURFACE DEFECTS

Salvaging surface-damaged aluminum castings
 M-FS-18789 870-10120 08
 Reference for radiographic film interpreters
 M-FS-16695 870-10189 03
 Acoustic emission used as weld quality monitor
 AEC-10018 872-10427 08

SURFACE DIFFUSION

Prevention of cathode damage from positive ion bombardment
 HQ-10688 872-10654 03
 A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
 LANGLEY-11536 874-10234 01

SURFACE DISTORTION

Modified faceplate assembly for stud-welding gun
 M-FS-16725 870-10044 08

SURFACE FINISHING

Salvaging surface-damaged aluminum castings
 M-FS-18789 870-10120 08
 Increased resistance to stress corrosion of aluminum alloys
 M-FS-20788 870-10396 04
 Less-expensive Rochon prisms
 M-FS-20554 870-10681 03
 Device prepares aluminum surfaces for welding
 M-FS-20750 871-10214 07
 Practical method of diffusion-welding steel plate in air
 LEWIS-11387 871-10455 08

A new low-cost method for producing collimating mirrors
 LEWIS-11553 872-10513 08
 Sintered diamond compacts using metallic cobalt binders
 HQ-10706 872-10519 04
 Sputter etching of hemispherical bearings
 HQ-10712 872-10534 08
 Machine finishes balls to high degree of roundness
 M-FS-21448 872-10595 08
 Electro-chemical grinding
 LANGLEY-10801 872-10744 08
 Applying high-emittance and solar-absorptance coating to aluminum
 LANGLEY-10151 873-10238 04
 Process to restore obliterated serial numbers on metal surfaces
 LEWIS-12085 874-10020 07

SURFACE GEOMETRY

A proposed laser measurement system for determining surface contour
 HQ-10326 870-10263 02
 Prevention of cathode damage from positive ion bombardment
 HQ-10688 872-10654 03

SURFACE PROPERTIES

Directional control of radiant heat
 LEWIS-90237 870-10321 03
 Friction characteristics of graphite and graphite-metal combinations at various temperatures
 NUC-10151 870-10467 04
 Electron fractography used to examine nickel-base alloys
 M-FS-18649 870-10571 04
 Less-expensive Rochon prisms
 M-FS-20554 870-10681 03
 A new method for measuring slipperiness of airport runways and other paved surfaces
 LANGLEY-10795 870-10712 06
 Computer program for thermal analysis of shadow shields in a vacuum
 LEWIS-11236 871-10115 09
 Computerized methods for trafficability analysis
 M-FS-21423 871-10484 03
 Program for determination of radiation interchange factors
 MSC-17563 872-10071 09
 A method of eliminating hydrogen maser wall shift
 HQ-10663 872-10670 03
 Thermal contact resistance in a non-ideal joint
 M-FS-21775 873-10105 03

SURFACE REACTIONS

Study of in-situ degradation of thermal control surfaces
 M-FS-20892 872-10336 04

SURFACE ROUGHNESS

Self-forming shim or gasket for mounting heavy equipment
 KSC-10504 870-10289 07
 Effect of wall roughness on liquid oscillations damping in rectangular tanks
 M-FS-20799 870-10388 06
 Measurement of surface roughness slope
 LEWIS-11080 870-10722 01
 High-friction mechanical grips
 JSC-19260 873-10234 06
 Surface roughness measured by optical signatures
 ARC-10853 874-10118 03

- Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
- SURFACE TEMPERATURE**
Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
- SURFACE VEHICLES**
Optimal electric-drive system for vehicles
NPO-11210 B70-10435 02
A simple dead-reckoning navigational system
M-FS-21165 B72-10409 02
Tandem steerable running gear
M-FS-22012 B72-10499 07
Triangular wheel locomotion mechanism
NPO-11366 B72-10714 06
- SURFACE WAVES**
Novel wave generator adaptable to indoor surfing
LEWIS-11096 B70-10563 03
- SURFACTANTS**
Preparation of magnetic ferrofluids in alternative carrier liquids
GSFC-10159 B70-10011 04
Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03
Development of conformal coating materials
M-FS-21393 B71-10483 04
- SURGERY**
Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
A system for the automatic measurement and digital display of systolic and diastolic blood pressures
MSC-13227 B71-10329 05
Cutting thin sections of bone
ARC-10555 B72-10303 05
Artificial limb connection
KSC-10833 B74-10183 05
- SURGES**
Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
A conceptual current surge protector for incandescent lamps
M-FS-16658 B70-10483 01
Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
NUC-10239 B71-10043 01
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
High voltage lightning grounding device
LEWIS-11282 B71-10136 01
Electronic ripple indicator
KSC-10162 B71-10170 01
Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02
A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
LEWIS-12109 B75-10068 02
- SURGICAL INSTRUMENTS**
Combination syringe provides air-free blood samples
MSC-12320 B70-10545 05
Cutting thin sections of bone
ARC-10555 B72-10303 05
- SURVEYOR LUNAR PROBES**
Television camera as a scientific instrument
NPO-11164 B70-10209 03
Development of a silver-zinc battery system
NPO-11444 B70-10718 02
- SURVEYS**
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
Gravitational gradiometer measures mass changes
M-FS-20814 B72-10140 03
Survey of aircraft electrical power systems
LEWIS-11678 B72-10383 02
LEAPS (Laser electro-optical alignment pole for surveying)
GSFC-11262 B73-10122 02
- SUSPENDING (HANGING)**
Safe suspension of specimens or clusters during dynamic testing - A concept
M-FS-15110 B70-10559 07
Zero-g simulation system for therapeutic application
M-FS-14671 B71-10034 04
Improved magnetic suspension technique
GSFC-11079 B74-10254 03
Resonant chambers for suspending materials in air
NPO-13263 B75-10050 03
Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06
- SUSPENDING (MIXING)**
Preparation of magnetic ferrofluids in alternative carrier liquids
GSFC-10159 B70-10011 04
Reinforcement of polymeric structures with asbestos fibrils
HQ-09954 B70-10020 03
Granular two-phase insulation systems
NPO-12068 B71-10290 04
- SUSPENSION SYSTEMS (VEHICLES)**
Continuous-flow variable-density wind tunnel facilities
NPO-11287 B72-10078 06
Three-point compound sine plate offers cost and weight savings
MSC-15818 B72-10118 07
- SWAGING**
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
- SWEAT COOLING**
Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04
- SWEEP CIRCUITS**
Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
- SWEEP FREQUENCY**
Precise audio-frequency markers for nuclear magnetic resonance spectra
NPO-11147 B70-10086 02
Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
- Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02
- SWIMMING**
New method speeds body inert gas saturation and utilizes surface decompression
MSC-13543 B71-10330 05
- SWINGBY TECHNIQUE**
Multibody Interplanetary Swingby Trajectories / MIST-1/
M-FS-15081 B70-10603 09
- SWITCHES**
Fuse and switch functions combined within a single housing
HQ-10497 B70-10003 01
High pressure flow-rate switch
NPO-10722 B70-10028 07
Antenna-array, phase quadrature tracking system
MSC-12205 B70-10095 02
Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03
Brushless direct-current motors
NPO-11351 B70-10234 02
A long-lived precision switch actuator for controlling pump-piston action
NPO-10757 B70-10279 07
Transistor current and voltage limiting switch
NPO-11166 B70-10414 01
Improved manual radio frequency direction finder
M-FS-20507 B70-10422 02
New data acquisition system records bearing measurements directly
LEWIS-10510 B70-10503 06
Inexpensive automatic ranging for digital voltmeters and frequency counters
NUC-10240 B70-10530 01
Electronic flow simulator for eddy current probe calibration
NUC-10211 B70-10533 01
Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 B70-10534 01
Ground computer test trap
KSC-10574 B70-10561 09
Composite metal-oxide device has voltage sensitive capacitance
HQ-10594 B70-10687 01
High-speed digital plotter
ARG-90001 B71-10049 02
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
Hybrid redundancy system for improving reliability - A concept
NPO-11546 B71-10132 01
Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
Predicting service life margins
M-FS-24015 B71-10194 06
Stored program concept for analog computers
M-FS-20874 B71-10240 09
Man-machine communication - A transparent switchboard for computers
MSC-13746 B71-10263 02
On-line analysis of random vibrations
ARC-10154 B71-10284 09
Improved relay chatter detector
NPO-10355 B71-10292 01

Calibration-interval adjustment indicator
- A concept
M-FS-18693 B71-10309 01
Double phase-lock loop with rapid
transient response - A concept
GSFC-10864 B71-10349 01
High density plasma gun generates
plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03
Pulse width-pulse rate modulator
ARC-10025 B71-10497 01
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Ferromagnetic-fluid logic devices
ARC-10503 B72-10011 06
A hybrid electromechanical solid state
switch for ac power control
MSC-14005 B72-10018 02
Tornado detector and alarm
M-FS-20915 B72-10106 01
Frequency switch keyed oscillator
ARC-10412 B72-10124 01
Current switch has built-in time delay:
A concept
MSC-17324 B72-10453 01
Patient's breath controls comfort
devices
LANGLEY-11138 B72-10533 05
Thermally responsive mechanical
actuator
GSFC-11697 B73-10208 04
High-power microstrip switch
NPO-11965 B73-10451 02
Piezoelectric relay
GSFC-11627 B74-10089 01
Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
Start/stop switches for testing
detonation velocity of explosives
KSC-10793 B75-10255 01

SWITCHING

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Solid-state ac-to-dc converter
HQ-10545 B70-10147 02
The use of the chatter mode in
self-adaptive systems
HQ-10159 B70-10274 06
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
Bimorph piezoelectric device functions as
flapper valve
ERC-10082 B70-10382 01
Solid state bistable power switch
ERC-10290 B70-10383 01
Multiport semiconductor devices
ERC-10293 B70-10448 01
Characteristics of step-recovery-diode
frequency multipliers
M-FS-20558 B70-10505 01
Design of hysteresis circuits using
differential amplifiers
ARC-10070 B71-10162 01
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Voltage-controlled oscillator
ARC-10078 B71-10171 01
Wall attachment, fluoric crossover
"AND" gate
XLA-07391 B71-10178 07
Waveshaping electronic circuit
M-FS-14916 B71-10429 01
Modular digital computer system
design
M-FS-22935 B74-10034 09

Video switcher for coupling video
cameras to single TV monitor
KSC-10782 B75-10192 02

SWITCHING CIRCUITS
Solid state switch provides high
input-to-output isolation
HQ-10488 B70-10022 01
Constant-voltage drive current-steering
switch
NPO-10743 B70-10046 01
Superconducting "transistor" acts as
high-speed switch
HQ-10547 B70-10082 01
Precision full-wave rectifier
ARC-10101 B70-10161 02
Nondissipative optimum charge
regulator
XGS-10439 B70-10186 01
Electro-optical time marker for
high-speed cameras
KSC-10294 B70-10229 01
Switching circuits with fast response and
low power drain
GSFC-10878 B70-10250 01
P-I-N diode switch
GSFC-10661 B70-10278 01
A transformer of closely spaced pulsed
waveforms
LEWIS-11045 B70-10351 01
Signal phase switches offer greater
dynamic range
NPO-10709 B70-10393 01
Efficient/reliable dc-to-dc inverter
circuit
XGS-06226 B70-10425 01
A power semiconductor test circuit with
reduced power requirements
LEWIS-11175 B70-10498 01
Fault detection monitor circuit provides
"self-heal capability" in electronic modules
- A concept
KSC-10394 B70-10515 01
Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
Solid state remote circuit selector
switch
LEWIS-10387 B70-10579 01
Brushless direct-current motor with
stationary armature and field
XGS-05290 B70-10691 02
Novel shift register eliminates logic gates
and power switching circuits
GSFC-10517 B71-10322 01
Remote control radioactive-waste
removal system uses modulated laser
transmitter
LANGLEY-10311 B71-10343 03
Solid-state data interpretation system -
A concept
M-FS-20587 B71-10366 02
Television multiplexing system
KSC-10654 B71-10391 02
RF-controlled implantable solid state
switch
ARC-10136 B71-10426 01
Voter comparator switch provides fail
safe data communications system - A
concept
MSC-13932 B71-10504 02
Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
Peak acceleration limiter
NPO-10556 B72-10007 01
Improved device measures performance
of batteries under load
ARC-10252 B72-10051 02

Topological solution of bilateral switching
networks
ARC-10294 B72-10055 01
Time-adjusted variable resistor
NPO-11306 B72-10116 01
Electronic switching circuit uses
complementary non-linear components
AEC-10060 B72-10236 01
Dual redundant core memory systems
MSC-13993 B72-10261 09
Interferometer using RF switching
matrix
GSFC-11051 B72-10462 01
Pulse-width-modulated device for
precision temperature control
NPO-11407 B72-10507 02
Patient's breath controls comfort
devices
LANGLEY-11138 B72-10533 05
Peak-power-point monitor for solar
panel
NPO-11708 B72-10694 02
Insulated-gate field-effect transistor
strain sensor
LANGLEY-11012 B72-10731 01
Wideband wattmeter for instant
measurement of real power
LEWIS-11698 B72-10737 01
Impulse commutating circuit with
transformer to limit reapplied voltage
LEWIS-11849 B73-10004 01
Theory and calculus of cubical
complexes
NPO-11491 B73-10165 09
Compact 20-kiloampere
pulse-forming-network capacitor bank
LEWIS-12009 B73-10171 01
Fast recharge circuit for q-switched
lasers
GSFC-11510 B73-10257 02
Frequency shifting with a solid-state
switching capacitor
HQ-10812 B73-10259 01
Silicon switching transistor with high
power and low saturation voltage
NPO-11565 B73-10295 01
Logic controlled solid state switchgear
LEWIS-12044 B73-10408 02
High-power microstrip switch
NPO-11965 B73-10451 02
Versatile, analog-to-digital,
power-regulator controller
NPO-13178 B73-10467 02
Binary-selectable detector holdoff
circuit
M-FS-22898 B73-10487 02
Automatic PCM guard-band selector and
calibrator
KSC-10812 B73-10510 02
Isolated transfer of analog signals
LANGLEY-11312 B73-10513 02
Self-healing fuse
LEWIS-11964 B74-10004 02
High voltage solid-state relay
LEWIS-12096 B74-10006 01
Data processor with conditionally
supplied clock signals
GSFC-10975 B74-10021 02
Soft, thermally conductive material
LANGLEY-10850 B74-10132 04
Transmitter switch for high-power
microwave output
NPO-13439 B75-10122 02
Solid state remote power controllers for
120 VDC power systems
LEWIS-12523 B75-10150 02

- A 1-1/2-level on-chip-decoding bubble memory chip design
 LANGLEY-11766 B75-10222 01
 Three-phase dc motor decoder
 GSFC-11824 B75-10247 02
 Solid-state motor control and monitor system
 MSC-12721 B75-10316 02
- SWITCHING THEORY**
 Minimum switching network for generating the weight of a binary vector
 NPO-11590 B73-10274 09
 Central control element expands computer capability
 M-FS-23216 B75-10103 02
- SWIVELS**
 High mobility work station restraint support
 MSC-12419 B71-10301 07
- SYENITE**
 Spectral emission measurement of igneous rocks using a spectroradiometer
 M-FS-20837 B70-10661 04
- SYMBOLIC PROGRAMMING**
 FORTRAN 4 digital program changer
 MSC-17567 B71-10448 09
- SYMMETRY**
 Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03
 Wall attachment, fluoric crossover "AND" gate
 XLA-07391 B71-10178 07
 Computation of group table alphanumeric display
 LEWIS-11346 B71-10373 09
 Snap dynamics
 M-FS-21531 B72-10265 09
- SYNCHRONISM**
 Digital data transition tracking loop improves data reception
 NPO-10844 B70-10009 02
 Burst synchronization detection system
 MSC-90317 B70-10159 02
 Systems of coding and their implementation
 NPO-11469 B71-10006 09
 Multiple shutters for a stereoscopic camera
 MSC-13507 B71-10065 03
 An improved telemetry system
 ARC-10336 B71-10201 01
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Efficient digital comparison technique for logic circuits
 M-FS-21080 B71-10218 02
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Self-synchronizing, bi-orthogonal coded PCM telemetry system
 GSFC-11237 B71-10324 02
 Double phase-lock loop with rapid transient response - A concept
 GSFC-10864 B71-10349 01
 Television multiplexing system
 KSC-10654 B71-10391 02
 Voter comparator switch provides fail safe data communications system - A concept
 MSC-13932 B71-10504 02
 Aircraft communication via telefacsimile system
 M-FS-20839 B72-10139 02
 Differential input preamplifier
 ARC-10489 B72-10165 01
- Time-synchronized VLF phase-tracking receiver
 NPO-11600 B73-10275 02
 Quasars as very-accurate clock synchronizers
 NPO-13276 B75-10114 02
 Synchronizer for random binary data
 NPO-13286 B75-10325 02
 Computer/computer interface
 NPO-13428 B75-10326 02
- SYNCHRONIZERS**
 Delay-lock-loop code-correlation synchronizer
 GSFC-11868 B75-10291 02
 Trigger circuit forces immediate synchronization of free-running oscillator
 NPO-13646 B75-10337 01
- SYNCHRONOUS METEOROLOGICAL SATELLITE**
 A pseudo random-access synchronous meteorological satellite system
 GSFC-10895 B71-10220 02
- SYNCHRONOUS MOTORS**
 Phase locking of field sequential color wheel for small TV camera
 MSC-13857 B71-10326 02
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Synchro phase selector aid
 LANGLEY-11282 B73-10160 01
- SYNTHESIS**
 Synthesis of diamonds
 M-FS-20698 B70-10513 08
 Producing graphite with desired properties
 NUC-11001 B71-10042 04
 Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04
 Thermally stable polyimides from solutions of monomeric reactants
 LEWIS-11325 B71-10442 04
 Flame resistant elastic elastomeric fibers
 MSC-13923-4 B72-10005 04
 Polyimide foams provide thermal insulation and fire protection
 ARC-10464 B72-10300 04
 Synthesis of temperature and solvent-resistant polymers
 M-FS-20848 B72-10342 04
 Polymeric binder for explosives
 AEC-10062 B72-10366 04
 Bondability of RTV silicon rubber
 AEC-10026 B72-10367 04
 Immobilized phosphorylase for synthesis of polysaccharides from glucose
 ARC-10680 B72-10550 04
 A process yields large quantities of pure ribosome subunits
 HQ-10662 B72-10653 05
- SYNTHETIC FIBERS**
 Viscoelastic cushion for patient support
 MSC-12447 B71-10316 05
- SYRINGES**
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05
 Automatic amino acid analyzer
 ARC-10215 B71-10165 04
- SYSTEM EFFECTIVENESS**
 Systems effectiveness evaluation program
 HQ-10306 B72-10458 09
 Satellite auxiliary propulsion systems
 NPO-11744 B73-10023 06
- A summary report on system effectiveness and optimization study
 M-FS-22126 B73-10104 09
- SYSTEM FAILURES**
 Concept for a distributed processor computer
 ERC-10271 B70-10481 02
 Analytical prediction of reverse buckling pressure for thin shells
 KSC-10515 B70-10582 06
 Lightweight, self-evacuated insulation panels
 LEWIS-90361 B70-10646 03
 Voter comparator switch provides fail safe data communications system - A concept
 MSC-13932 B71-10504 02
 Acoustical analysis system
 GSFC-11087 B72-10751 02
 Automated maintenance for complex hybrid systems
 NPO-13143 B74-10279 09
- SYSTEMS**
 A practical solar energy heating and cooling system
 M-FS-22563 B73-10156 05
- SYSTEMS ANALYSIS**
 System availability management technique for reliability and maintainability analysis
 KSC-10315 B70-10063 09
 Simplified computation of compressible fluid flow parameters
 KSC-10400 B70-10225 06
 Block-coded communications
 NPO-11397 B70-10242 02
 Automated validation of a computer operating system
 M-FS-14510 B70-10257 09
 Reliability Analysis Model
 M-FS-14513 B70-10614 09
 Systems approach provides management control of complex programs
 M-FS-20791 B70-10647 06
 Numerical integration of second order differential equations
 M-FS-20536 B71-10186 09
 Broadband RF-distribution amplifier
 NPO-11401 B72-10245 01
 Design curve for liquid helium storage vessels
 LEWIS-11498 B72-10286 02
 Mathematical techniques for estimating operational readiness of complex systems
 MSC-17694 B72-10335 09
 Expandable coating cocoon leak detection system
 M-FS-21848 B72-10380 06
 Survey of aircraft electrical power systems
 LEWIS-11678 B72-10383 02
 A closed loop cryogenic environment pressure regulating system
 MSC-13880 B72-10390 02
 Phosphonium chloride for thermal storage
 ARC-10572 B72-10422 04
 Computer program analyzes and monitors electrical power systems (POSIMO)
 GSFC-11505 B72-10610 09
 Solar powered absorption cycle heat pump using phase change materials for energy storage
 M-FS-21927 B72-10615 06

Analytic procedures for determining dimensional redundancies in electronic devices
 HQ-10709 872-10656 09
 Acoustical analysis system
 GSFC-11087 872-10751 02
 A summary report on system effectiveness and optimization study
 M-FS-22126 873-10104 09
 Dynamic power load simulator
 JSC-14285 873-10305 02

SYSTEMS ENGINEERING

Block-coded communications
 NPO-11397 870-10242 02
 New model performance index for engineering design of control systems
 HQ-10520 870-10293 06
 Quick calculation method for fluid flow through duct systems
 M-FS-15069 870-10487 02
 Easy manual operation of overhead garage doors - A concept
 KSC-10555 870-10543 07
 Design and evaluation of brushless electrical generators
 LEWIS-10124 870-10554 02
 Spectral analysis of oscillation instabilities in frequency standards
 M-FS-20778 870-10572 02
 Reliability Analysis Model
 M-FS-14513 870-10614 09
 Proceedings of the Symposium on Long-Life Hardware for Space
 M-FS-20638 870-10649 03
 Development of a silver-zinc battery system
 NPO-11444 870-10718 02
 Diagnostic capability added to digital events evaluator
 KSC-10526 871-10001 02
 Automatic reference level control for an antenna pattern recording system
 M-FS-20257 871-10014 01
 Generalized safety equation - A concept
 M-FS-20522 871-10183 06
 Study of nondestructive techniques for redundancy verification
 KSC-10661 871-10258 02
 Systems management techniques and problems
 M-FS-21401 871-10361 01
 Analysis of multilayered fiber composites
 LEWIS-11347 871-10372 09
 Thermal control for storage of cryogenic propellants in a multiple-tank system: A concept
 ARC-10560 872-10278 03
 A method for calculating the effects of design errors and measurement errors on pump performance
 LEWIS-11503 872-10292 07
 The design of an automated verification of redundant systems
 KSC-10702 872-10295 02
 Twistable mold for helicopter blades
 ARC-10682 872-10432 08
 Very high speed direct-readout, control and recording system
 M-FS-20658 872-10442 02
 Combination pressure regulator and safety valve: A Concept
 MSC-14088 872-10446 06
 Specification guidelines for hybrid microcircuits
 M-FS-22090 872-10474 01

Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
 M-FS-21652 872-10486 09
 Tandem steerable running gear
 M-FS-22012 872-10499 07
 Advanced high-temperature electromagnetic pump
 LEWIS-11283 872-10537 07
 An improved gas extraction furnace
 MSC-14138 872-10544 04
 Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
 LEWIS-11635 872-10586 09
 Computer program analyzes and monitors electrical power systems (POSIMO)
 GSFC-11505 872-10610 09
 Design criteria monograph for high-load high-speed rolling-contact bearings
 LEWIS-11823 872-10627 04
 Design criteria monograph on solid rocket motor igniters
 LEWIS-11826 872-10715 06
 A summary report on system effectiveness and optimization study
 M-FS-22126 873-10104 09
 Automated maintenance for complex hybrid systems
 NPO-13143 874-10279 09
 Telecommunications systems design techniques handbook
 NPO-13245 874-10284 02

SYSTOLIC PRESSURE

A system for the automatic measurement and digital display of systolic and diastolic blood pressures
 MSC-13227 871-10329 05

T**TABLES (DATA)**

A method for rapidly evaluating the linearity of calibration data
 M-FS-14834 870-10085 03
 Cryogenic thermocouple calibration tables
 NUC-10551 870-10197 03
 High precision cryogenic thermal conductivity standards
 NUC-10555 870-10310 04
 Uniform data system standardizes technical computations and the purchasing of commercially important gases
 NUC-10549 870-10333 04
 Soluble high molecular weight polyimide resins
 LEWIS-11056 870-10504 04
 Evaluation of decay curves of a chemical species undergoing simultaneous first- and second-order decay
 ARG-10281 870-10608 03
 Technique for Evaluating Multiple Probability Occurrences /TEMPO/
 M-FS-14333 870-10626 06
 PUZZLE - A program for computer-aided design of printed circuit artwork
 LRL-10050 871-10122 09
 Induction brazing manual
 M-FS-14924 871-10123 08
 Standardized Pearson type 3 density function area tables
 M-FS-20541 871-10205 02

Calibration-interval adjustment indicator - A concept
 M-FS-18693 871-10309 01
 Statistical analysis tables for truncated or censored samples
 M-FS-21024 871-10351 03
 Effects of the thermal sterilization procedure on polymeric products
 NPO-11688 871-10362 04
 Computer program for discounted cash flow/rate of return evaluations
 M-FS-19040 871-10377 09
 Flat conductor cable handbook
 M-FS-21009 871-10379 01
 Table for estimating parameters of Weibull distribution
 M-FS-18817 871-10436 03
 A low-altitude satellite interaction study
 GSFC-11384 871-10499 09
 Analog table look-up device identifies unknown terrain
 MSC-13816 872-10033 03
 Topological solution of bilateral switching networks
 ARC-10294 872-10055 01
 Frequency-wavelength calculator with table of dielectric properties
 GSFC-11200 872-10472 03
 Design criteria monograph for pressurized metal cases
 LEWIS-11835 872-10633 04
 Binary alloys for refractory-metal brazing
 LEWIS-12184 874-10125 08
 Reliability data for electronic and electromechanical components: A report
 NPO-13153 874-10280 01
 Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
 MSC-14866 875-10236 03

TABLETS

An ingestible temperature-transmitter
 ARC-10583 872-10275 01

TACHOMETERS

Slow-speed drives for miniature devices
 NPO-10700 870-10007 02
 Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
 M-FS-20860 871-10072 07
 A simple tachometer circuit
 ARC-10603 872-10308 01
 Pseudotachometer for mobile metabolic analyzer
 M-FS-22909 873-10480 02

TACTILE DISCRIMINATION

Convuluted fabric for full-pressure gloves
 ARC-10529 872-10215 04

TAFEL LAW

Mechanism of operation of the TFE-bonded gas-diffusion electrode
 HQ-10536 870-10059 01

TAKEOFF

Ferrite attenuator modulation improves antenna performance
 NPO-12011 870-10702 01
 Laser net - A concept for monitoring wingtip vortices on runways
 M-FS-20857 871-10360 02

TALC

Improved fire-resistant coatings
 GSFC-10072 871-10198 04

TANGENTS

Measurement of surface roughness slope
 LEWIS-11080 870-10722 01

- Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 B71-10297 04
- TANK GEOMETRY**
Propellant acquisition device for use with a spinning toroidal tank
ARC-10840 B74-10059 06
- TANKS (CONTAINERS)**
Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
Development of lightweight cryogenic tank supports
M-FS-20726 B70-10291 07
Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
Welded polypropylene liners for large descaling tanks
M-FS-18711 B71-10012 07
Low temperature fluid blender
LEWIS-11206 B71-10058 04
System accurately controls pressure in cryogenic tanks
LEWIS-11329 B71-10118 03
Communications system for zero-g simulation tests in water
M-FS-21357 B71-10344 02
Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
Structural design and stress analysis program for advanced composite filament-wound axisymmetric pressure vessels (COMTANK)
NPO-11943 B72-10073 09
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
Acoustic-emission signal-processing analog unit for locating flaws in large tanks
M-FS-24424 B73-10325 06
A band clamp with a spring toggle lever
MSC-14736 B74-10240 07
Foam-machining tool with eddy-current transducer
M-FS-23298 B75-10309 08
- TANTALUM**
Low power NAND gate
M-FS-14487 B70-10203 01
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03
Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04
Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08
Improved electron emitter
LEWIS-10814 B71-10388 03
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
Tungsten-reinforced tantalum
LEWIS-11750 B72-10684 04
Response of tantalum capacitors to fast transient overvoltages
MSC-14822 B75-10274 01
- TANTALUM ALLOYS**
Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 B70-10210 04
- Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10277 B70-10445 03
Improved method for cladding the inside of metal tubes
LEWIS-11174 B70-10723 08
Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 B73-10003 08
Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 B74-10085 04
High strength forgeable tantalum base alloy
LEWIS-11386 B75-10023 04
- TANTALUM OXIDES**
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
- TAPE RECORDERS**
Telemetry receiver
NPO-10746 B70-10008 02
Radio frequency baseband recording technique
HQ-10317 B70-10069 02
Telemetry for impact acceleration measurements
ARC-10289 B70-10079 01
Portable low-frequency vibration measuring and recording system
LANGLEY-10543 B71-10126 02
Simple two-speed tape transport drive
GSFC-10981 B71-10409 06
Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02
Video information system
M-FS-21711 B72-10267 09
Recovery of recordings from heat damaged magnetic tapes
JSC-14219 B73-10173 02
Automated operation of an instrumentation FM tape recorder
LEWIS-11941 B73-10195 02
Processor for high-density digital tape-recorded signals
NPO-11399 B73-10354 02
Instrument for measuring thin-film belt lengths
NPO-13149 B73-10455 06
Subminiature micropower digital recorder
ARC-10746 B73-10491 02
- TAPERING**
Compact fluid-flow restrictor
MSC-15803 B70-10679 07
Specimen for high-temperature tensile tests
ARC-10531 B72-10028 04
- TAPES**
Strain gage load measuring device - A concept
MSC-13385 B70-10326 01
Fixture for multiple-FCC chemical stripping and plating
M-FS-20237 B71-10420 08
Self-deploying boom
GSFC-10566 B72-10574 07
- TAPS**
Hot tap thermowell installation
MSC-12427 B71-10302 07
- TARGET ACQUISITION**
A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
- TARGET RECOGNITION**
Quick response targeting program
M-FS-15157 B71-10147 09
- TARGET THICKNESS**
Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 B74-10063 03
Method of measuring the thickness of radioactive thin films
LEWIS-11971 B74-10065 03
A high yield neutron target
LEWIS-12058 B74-10066 03
- TARGETS**
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Quick response targeting program
M-FS-15157 B71-10147 09
Inexpensive, large-diameter, radar tracking and calibration spheres
XLA-11154 B71-10190 01
- TASKS**
Automated preventive maintenance program
GSFC-11408 B71-10500 09
- TASTE**
Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05
Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05
- TAYLOR SERIES**
Error compensation for hybrid-computer solution of linear differential equations
ERC-10262 B70-10446 09
Electrocardiogram signal analyzer
MSC-12710 B75-10269 05
- TDR SATELLITES**
Radiation diffraction calculation program /DIFF2/
GSFC-11422 B71-10462 09
- TEARING**
The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
Improved heat-resistant garments
MSC-12109 B70-10544 08
New type of nonflammable paper
MSC-13432 B70-10546 04
- TECHNETIUM FLUORIDES**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
ARG-10412 B70-10233 04
- TECHNETIUM ISOTOPES**
A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 B71-10439 02
- TECHNOLOGY TRANSFER**
A study of NACA and NASA published information of pertinence in the design of light aircraft
LANGLEY-10778 B70-10725 06

High mobility work station restraint support
 MSC-12419 B71-10301 07
 Estimating carbon monoxide exposure
 MSC-17211 B71-10319 04
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
 High efficiency telemetry method
 NPO-10388 B71-10371 02

TECHNOLOGY UTILIZATION

A study of NACA and NASA published information of pertinence in the design of light aircraft
 LANGLEY-10778 B70-10725 06
 Zero-g simulation system for therapeutic application
 M-FS-14671 B71-10034 04

TEETH

New tooth enamel from brushite crystals
 ERC-10338 B74-10199 05

TEFLON (TRADEMARK)

Improved cover for cadmium sulfide solar cells
 LEWIS-11003 B70-10584 01
 Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 B71-10475 05
 Reusable anaerobic system for microbiological studies - A concept
 MSC-13920 B71-10495 05
 Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
 LANGLEY-10940 B72-10115 04
 Improved high-performance shock tube
 NPO-11885 B72-10242 03
 Fabrication of uniaxial filament-reinforced epoxy tubes for structural application
 LANGLEY-10203 B72-10340 04
 Low cost anti-galling bushings
 LEWIS-11724 B72-10359 08
 Improved universal electrical connector
 M-FS-14741 B72-10363 01
 A sonic transducer to detect fluid leaks
 KSC-10704 B72-10376 01
 Watertight low-cost electrical connector
 LEWIS-11552 B72-10506 01
 Flammability control for electrical cables and connectors
 M-FS-21584 B73-10235 02

TELECOMMUNICATION

Digital data transition tracking loop improves data reception
 NPO-10844 B70-10009 02
 Mounting, support, and isolation of various components of a hydrogen maser
 HQ-10563 B70-10032 02
 Radio frequency baseband recording technique
 HQ-10317 B70-10069 02
 Antenna-array, phase quadrature tracking system
 MSC-12205 B70-10095 02
 Transistor bonding pad configuration for uniform injection and low inductance
 GSFC-10790 B70-10181 01
 Improved antenna pattern recorder provides visual display of RF power
 M-FS-20447 B70-10230 09
 A proposed laser measurement system for determining surface contour
 HQ-10326 B70-10263 02
 Theory and application of Kalman filtering
 M-FS-20491 B70-10309 06

Radiometric evaluation of antenna-feed component losses
 NPO-11238 B70-10344 02
 A radiometric method for measuring the insertion loss of radome materials
 NPO-11423 B70-10519 02
 Lightweight S-band helix antenna
 KSC-10392 B70-10538 02
 System automatically tunes hydrogen masers
 HQ-10502 B70-10616 02
 Ferrite attenuator modulation improves antenna performance
 NPO-12011 B70-10702 01
 Systems of coding and their implementation
 NPO-11469 B71-10006 09
 Electronic device increases threshold sensitivity and removes noise from FM communications receiver
 MSC-12165 B71-10091 02
 Multifunction audio digitizer for communications systems
 MSC-13855 B71-10318 02
 Communications system for zero-g simulation tests in water
 M-FS-21357 B71-10344 02
 Double phase-lock loop with rapid transient response - A concept
 GSFC-10864 B71-10349 01
 A nonlinear-coherence receiver
 NPO-11921 B73-10144 02
 A closed, digital telephone system
 JSC-13912 B73-10226 02
 Spectral Analysis Program (SAP)
 JSC-14310 B73-10227 09
 Flared-cone turnstile antenna
 LANGLEY-10970 B73-10425 02
 RF antenna-pattern visual aids for field use
 KSC-10821 B73-10426 02
 Digital transmitter for data bus communications system
 JSC-14558 B73-10511 02
 Dually-mode-locked ND: YAG laser
 GSFC-11746 B74-10038 03
 Method for remotely sensing turbulence of planetary atmospheres
 NPO-13154 B74-10168 03
 Continuous Fourier transform system
 ARC-10466 B74-10170 02
 Telecommunications systems design techniques handbook
 NPO-13245 B74-10284 02
 High-efficiency multifrequency feed
 GSFC-11909 B74-10288 02
 High-speed fault-tolerant telemetry/computer interface
 NPO-13139 B74-10296 02
 Transmission line for S-band masers
 NPO-13504 B75-10126 03
 Multiplexing technique for computer communications via satellite channels
 ARC-10879 B75-10133 09
 New broadband square-law detector
 NPO-13410 B75-10180 02

TELEMETRY

Telemetry receiver
 NPO-10746 B70-10008 02
 Digital data transition tracking loop improves data reception
 NPO-10844 B70-10009 02
 Block encoders for Reed-Muller codes
 NPO-10629 B70-10051 01
 Telemetry for impact acceleration measurements
 ARC-10289 B70-10079 01

Electronic sleep analyzer
 MSC-13282 B70-10110 02
 Reduction of background in an X-ray proportional counter
 HQ-10253 B70-10169 02
 Design procedure for improved active filters
 M-FS-20445 B70-10238 02
 Block-coded communications
 NPO-11397 B70-10242 02
 Hall effect transducer gives electrical output proportional to meter shaft rotation
 LANGLEY-10620 B70-10298 01
 Constant-amplitude RC oscillator
 ARC-10262 B70-10338 01
 Digital phase-modulation/multiplex system
 NPO-11338 B70-10355 02
 Signal phase switches offer greater dynamic range
 NPO-10709 B70-10393 01
 Ultra-flexible biomedical electrodes and wires
 ARC-10268 B70-10420 05
 Elimination of redundancy in telemetered data
 HQ-10585 B70-10431 06
 Wide-range tracking oscillator generates phase and frequency coherent output
 M-FS-14518 B70-10451 02
 Electronic scanning of 2-channel monopulse patterns
 GSFC-10299 B70-10485 02
 Digital demodulation with data subcarrier tracking
 NPO-10858 B70-10518 02
 Circuit suppresses spurious sidebands
 MSC-13425 B70-10541 01
 Digital input is buffered to real-time analog display
 KSC-10397 B70-10562 01
 Constant current load matches impedances of electronic components
 GSFC-10982 B70-10643 01
 Improved convolutional coding
 MSC-13625 B70-10698 09
 Digital telemetry system eliminates data redundancy
 MSC-12388 B71-10082 02
 Miniature implantable instrument measures and transmits heart function data
 ARC-10201 B71-10163 05
 An improved telemetry system
 ARC-10336 B71-10201 01
 Self-synchronizing, bi-orthogonal coded PCM telemetry system
 GSFC-11237 B71-10324 02
 High efficiency telemetry method
 NPO-10388 B71-10371 02
 Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
 Digital aspect clock
 ARC-10088 B71-10440 02
 Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03
 Third order digital-to-analog converter
 MSC-12458 B72-10030 02
 Implanted telemeter for electrocardiogram and body temperature
 XAC-08505 B72-10035 05
 Lightweight, broad-band spectrum analyzer
 ARC-10405 B72-10060 01

- Technique minimizes the effects of dropouts on telemetry records
 NPO-11421 B72-10088 02
 Accurate measurement of telemetry performance
 NPO-11457 B72-10089 02
 Universal dc signal conditioner
 MSC-17526 B72-10510 02
 Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
 A range expanding signal conditioner
 M-FS-21720 B72-10639 02
 Data multiplexer using a tree switch
 NPO-11333 B73-10289 02
 Flexible format, computer accessed telemetry system
 NPO-11358 B73-10290 02
 Automatic carrier acquisition system for phase-lock-loop receivers
 NPO-11628 B73-10343 02
 All-digital phase-lock loops for noise-free signals
 NPO-11914 B73-10350 01
 Data-aided carrier tracking loops
 NPO-11282 B73-10356 01
 Data compression by a decreasing slope-threshold test
 NPO-10769 B73-10382 02
 Sampling command generator corrects for noise and dropouts in recorded data
 NPO-11886 B73-10390 01
 Low-distortion receiver for bilevel, baseband PCM waveforms
 MSC-14557 B74-10025 02
 Wireless telemetry system for floating bodies
 KSC-10855 B74-10028 06
 Time-control system for communication between data-collection and orbiting
 GSFC-11182 B74-10088 02
 Spacecraft attitude determination by fanscan technique
 ARC-10827 B74-10198 02
 Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
 NPO-11572 B74-10209 01
- TELEOPERATORS**
 Electromechanical hand incorporates touch sensors and trigger function
 M-FS-20812 B70-10348 07
- TELEPHONES**
 Constant-voltage drive current-steering switch
 NPO-10743 B70-10046 01
 A frequency division multiplex technique for transmitting commands
 KSC-10521 B71-10169 02
 Remote measurements by telephone
 LEWIS-11704 B73-10010 02
- TELEPHONY**
 A closed, digital telephone system
 JSC-13912 B73-10226 02
 Eight-channel telephone telemetry system
 JSC-14452 B73-10320 05
- TELEPRINTERS**
 FORTRAN 4 digital program changer
 MSC-17567 B71-10448 09
- TELESCOPES**
 Stellar spectrum classifier
 MSC-13450 B70-10319 03
 Radiant heating concept efficient for light-transmitting windows
 M-FS-20630 B70-10324 03
- Heat-rejection windows for telescopes
 M-FS-20634 B70-10386 04
 Flexible pivot mount eliminates friction and hysteresis
 M-FS-20725 B70-10577 07
 Thermal and structural modeling of superinsulation
 M-FS-20324 B71-10019 02
 Optical design and analysis program
 GSFC-11393 B71-10456 09
 Optical inspection tool for interior surfaces of fluid lines
 M-FS-15162 B71-10513 06
 Assessment of water pollution by airborne measurement of chlorophyll
 ARC-10648 B72-10566 04
 Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
 M-FS-21212 B72-10665 03
 Torque control system
 GSFC-11077 B75-10085 06
 Visual alignment aid
 LANGLEY-11842 B75-10228 03
 Highly stable analog-to-digital converter
 NPO-13385 B75-10277 01
 General optics evaluation program (GENOPTICS)
 GSFC-12038 B75-10294 09
- TELETYPEWRITERS**
 Eye-controlled "teletypewriter"
 LANGLEY-11564 B73-10514 02
- TELEVISION CAMERAS**
 Television camera as a scientific instrument
 NPO-11164 B70-10209 03
 Neutron-image intensifier
 ARG-10249 B70-10240 03
 High speed television camera system processes photographic film data for digital computer analysis
 NPO-10745 B70-10282 02
 Phase locking of field sequential color wheel for small TV camera
 MSC-13857 B71-10326 02
 Application of calibration masks to TV vidicon tube
 KSC-10589 B71-10404 02
 Cine recording ophthalmoscope
 ARC-10399 B72-10189 05
 Hand-held photomicroscopy system
 ARC-10468 B72-10190 03
 Solid state television camera has no imaging tube
 M-FS-21553 B72-10254 02
 Video information system
 M-FS-21711 B72-10267 09
 Vidicon storage tube electrical input/output
 MSC-14053 B72-10285 02
 A proposed remote manipulator system: A concept
 MSC-14245 B72-10733 06
- TELEVISION EQUIPMENT**
 Electron energy analyzer
 HQ-10373 B70-10138 02
 Improved optical lens system
 NPO-11311 B70-10354 03
 Kaleidoscopic light feedback for television systems
 MSC-12386 B71-10068 03
 Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 B71-10226 02
 Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
- Tornado detector and alarm
 M-FS-20915 B72-10106 01
 Roll function in a flight simulator
 ARC-10557 B72-10417 02
 Neutron radiographic viewing system
 M-FS-22024 B72-10468 02
 A visual-display and storage device
 GSFC-10901 B72-10647 02
 Digital TV image enhancement system
 GSFC-11256 B73-10285 02
- TELEVISION RECEIVERS**
 Solid state television camera has no imaging tube
 M-FS-21553 B72-10254 02
- TELEVISION RECEPTION**
 New filter technique improves home television reception
 MSC-13729 B71-10141 02
- TELEVISION SYSTEMS**
 Burst synchronization detection system
 MSC-90317 B70-10159 02
 Kaleidoscopic light feedback for television systems
 MSC-12386 B71-10068 03
 Solar cell power scanner
 LEWIS-11280 B71-10223 02
 Video information system
 M-FS-21711 B72-10267 09
 A study of the power spectral density of an FM signal
 M-FS-21070 B72-10361 02
 Video switcher for coupling video cameras to single TV monitor
 KSC-10782 B75-10192 02
- TELEVISION TRANSMISSION**
 A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01
 Television multiplexing system
 KSC-10654 B71-10391 02
 Virtual-image display system for flight simulators
 ARC-10175 B71-10427 03
 Data compression by a decreasing slope-threshold test
 NPO-10769 B73-10382 02
- TELLURIUM**
 Piezoelectric transducer
 HQ-10548 B70-10157 01
 P-n junctions formed in gallium antimonide
 ERC-10302 B70-10500 01
- TEMPER (METALLURGY)**
 Thermal treatment and mechanical properties of aluminum-2021
 M-FS-20559 B70-10369 04
 Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
 M-FS-18794 B70-10506 04
 The mechanism of stress-corrosion cracking in 7075 aluminum alloy
 M-FS-18614 B70-10527 04
- TEMPERATURE**
 Nonflammable organic adhesives effective over wide temperature range
 MSC-13586 B70-10644 04
 CSM programs SM RCS propellant quantity gaging systems program
 MSC-17308 B71-10130 09
 Computer-controlled mass spectrometer for on-line gas analysis
 NPO-11427 B71-10191 03
 Accelerated battery-life testing - A concept
 GSFC-11085 B71-10348 06

- Anemometer calibrator
M-FS-21424 B71-10519 03
High-temperature, long-life thyatron
LEWIS-11327 B72-10134 01
Comparison of catalyst activity
ARC-10493 B72-10201 04
A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07
Sensor capsule for diagnosis of gastric disorders
HQ-10767 B72-10531 05
Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
LEWIS-11635 B72-10586 09
Program to produce horizontal stereographic print maps from Nimbus HRIR data
GSFC-11397 B72-10606 09
- TEMPERATURE COMPENSATION**
Constant current source for converting absolute temperatures to analog voltages
NPO-10733 B70-10164 02
Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
Precision voltage regulator
NPO-11502 B72-10092 01
Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01
Thermally stable structural framework
ARC-10612 B72-10252 08
Improved high-temperature gimbal joint
LEWIS-11705 B72-10489 06
Self-leveling load table
M-FS-22039 B74-10144 06
- TEMPERATURE CONTROL**
A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
Atmospheric composition affects heat-and mass-transfer processes
HQ-10271 B70-10094 04
Passive heat transfer control
HQ-10041 B70-10111 03
Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03
Temperature-controlled fluidic device A concept
HQ-10446 B70-10167 03
Combining micro dry column chromatography and mass spectrometry
NPO-11240 B70-10231 03
A temperature-controlled fluid flow regulator
M-FS-14259 B70-10283 07
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
Thermal and structural modeling of superinsulation
M-FS-20324 B71-10019 02
- Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Performance evaluation system for inertial navigation equipment
MSC-13542 B71-10087 02
Radiation view factor program
M-FS-21075 B71-10106 09
Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03
Thermal analysis system /TAS-1/ program
NPO-11849 B71-10386 09
Externally programmed variable timer
M-FS-20776 B71-10437 04
Apparatus tests flexural durability of FCC
M-FS-20113 B71-10458 08
Exothermic brazing units
M-FS-21435 B71-10467 08
Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08
Multichamber controllable heat pipe
ARC-10199 B71-10526 03
Soldering iron temperature indicator
NPO-11545 B72-10098 02
Preventing oil migration in vacuum systems
GSFC-11253 B72-10129 04
Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
Feedback control of variable conductance heat pipes
ARC-10460 B72-10169 03
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03
Phase-change materials handbook
M-FS-22064 B72-10464 04
Pulse-width-modulated device for precision temperature control
NPO-11407 B72-10507 02
Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
Breathing-metabolic simulator
HQ-10766 B72-10657 05
Temperature and humidity control of simulated human breath
HQ-10778 B72-10660 05
A method of eliminating hydrogen maser wall shift
HQ-10663 B72-10670 03
Oven temperature controller for electronic components
GSFC-11466 B73-10052 02
Balloon-borne package temperature controller
GSFC-11620 B73-10192 03
Mass flow controller for gaseous propellants
JSC-14221 B73-10207 06
- Fuel-cell heat and mass plate
M-FS-21318 B73-10489 07
Solar-energy conversion system provides electrical power and thermal control for life-support systems
M-FS-21628 B73-10524 06
Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
- TEMPERATURE DISTRIBUTION**
A 7.6m /25-ft/ extreme environments simulator
NPO-11353 B71-10036 03
FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
Analysis of thermal stress and metal movement during welding
M-FS-20984 B72-10333 04
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09
Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
- TEMPERATURE EFFECTS**
Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07
Highly stable biased amplifier and stretcher system
ARG-10354 B70-10142 01
Volumetric calibration of a propellant utilization system
M-FS-14943 B70-10156 06
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
Power semiconductor device with negative thermal feedback
HQ-10577 B70-10262 01
Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
ERC-10463 B70-10269 03
Volumetric leak detector
MSC-11325 B70-10302 07
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
Coulometer battery state-of-charge indicator
LEWIS-11083 B70-10323 01
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10277 B70-10445 03
Multiport semiconductor devices
ERC-10293 B70-10448 01
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04
Growing single crystals in silica gel
ERC-10306 B70-10479 02

Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02

Synthesis of diamonds
M-FS-20698 B70-10513 08

Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07

Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02

Silicon solar cells improved by lithium doping
NPO-11390 B70-10585 04

Frost as an insulator
NUC-11039 B70-10593 03

High-strength magnetic materials
LEWIS-10697 B70-10596 03

Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04

Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04

Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07

Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01

Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07

Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04

Thermally stable structural framework
ARC-10612 B72-10252 08

Catalyst for sodium chlorate decomposition
ARC-10584 B72-10305 04

Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 B72-10346 04

Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04

Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07

Right angle mounted cold trap
GSFC-11323 B72-10436 06

Improved high-temperature gimbal joint
LEWIS-11705 B72-10489 06

Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04

Watertight low-cost electrical connector
LEWIS-11552 B72-10506 01

Carbon dioxide concentration indicator
HQ-10582 B72-10526 05

Oxygen plasmas used to synthesize superoxides
ARC-10686 B72-10570 04

Thermal induced flow oscillations in heat exchangers for supercritical fluids
M-FS-21262 B72-10598 06

An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08

Glass transition temperatures of liquid prepolymers obtained by thermal penetrometry
NPO-11730 B73-10036 04

Structural analysis of viscoelastic materials under thermal and pressure loading
NPO-11727 B73-10301 09

Analysis of orbital heat transfer
ARC-10844 B74-10116 03

Stable group delay cable
NPO-13138 B74-10295 01

Method of attaching insulation tiles
MSC-12619 B75-10104 04

Double-discharge copper-vapor laser
NPO-13348 B75-10123 03

Delay-lock-loop code-correlation synchronizer
GSFC-11868 B75-10291 02

Temperature-stable Gunn-diode oscillator
M-FS-23242 B75-10306 01

Compound heat pipe operates over broad temperature range
M-FS-23329 B75-10313 06

TEMPERATURE GRADIENTS

Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01

New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03

Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04

A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03

Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03

Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08

Reduction of valve leakage - A concept
NPO-12003 B71-10315 07

Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03

Psychrometric chart for physiological research
ARC-10394 B71-10470 03

Atmospheric density variations related to internal gravity waves
M-FS-21637 B72-10143 03

Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01

Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06

Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09

Tungsten-reinforced tantalum
LEWIS-11750 B72-10684 04

Low-void polyimide resins for autoclave processing
LEWIS-11665 B72-10728 04

Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04

Valve degradation detector
ARC-10850 B74-10117 03

TEMPERATURE INVERSIONS

Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04

TEMPERATURE MEASUREMENT

Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03

Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03

Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease
ERC-90066 B70-10376 01

A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02

High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03

A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03

Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03

Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03

Superior cryogenic insulation developed
M-FS-21560 B72-10187 04

Bileaf mechanical strain gage
ARC-10303 B72-10197 07

Determination of impact sensitivity of materials at high pressures
MSC-13700 B72-10216 07

A compact battery powered digital thermometer
MSC-14084 B72-10545 02

A thermocouple thermode for small animals
ARC-10550 B72-10559 05

Measurement of electron density and temperature in plasmas
ARC-10598 B72-10563 03

An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08

A multielement probe for coincident temperature and pressure measurements
LEWIS-11775 B72-10716 06

A flexible all-temperature pressure vessel
M-FS-19196 B73-10158 03

An improved method for obtaining a normalized junction temperature for semiconductors: A concept
JSC-14136 B73-10196 01

Atmospheric temperature measurements by Raman laser scattering
LEWIS-12065 B73-10251 03

Flexible temperature probe for biological systems
ARC-10796 B73-10498 05

Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05

Automated electronic system for measuring thermophysical properties
LANGLEY-11883 B75-10160 03

Simple temperature sensor with direct readout
LANGLEY-11818 B75-10260 01

TEMPERATURE MEASURING INSTRUMENTS

Constant current source for converting absolute temperatures to analog voltages
NPO-10733 B70-10164 02

Simple, accurate temperature-measuring instrument
MSC-12327 B70-10303 01

Improved heat shield/radiator
NPO-11105 B70-10318 03

Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
 LEWIS-11208 B70-10628 03
 Wide-range logarithmic radiometer for measuring high temperatures
 ARC-10254 B71-10498 01
 Bileaf mechanical strain gage
 ARC-10303 B72-10197 07
 An ingestible temperature-transmitter
 ARC-10583 B72-10275 01
 Limited tactile stimulus for prosthetic hands
 M-FS-16570 B73-10078 05
 Thermally responsive mechanical actuator
 GSFC-11697 B73-10208 04
 Thin-film temperature sensor
 NPO-11775 B74-10100 01
 Quartz crystal microbalances to measure wind velocity and air humidity
 NPO-13462 B75-10124 03

TEMPERATURE PROBES

Self-replaceable thermocouple for molten steel bath - A concept
 NUC-10223 B71-10125 01
 Flexible temperature probe for biological systems
 ARC-10796 B73-10498 05

TEMPERATURE PROFILES

Gas turbine combustor insensitive to compressor outlet distortion
 LEWIS-10286 B70-10312 07
 Swirl-can combustor segment
 LEWIS-11082 B70-10322 07
 Swept-frequency UHF radiometer for deep probes of earth - A concept
 MSC-13428 B70-10617 02
 Computer program for thermal analysis of shadow shields in a vacuum
 LEWIS-11236 B71-10115 09
 Design and evaluation of convectively cooled nozzles
 LEWIS-10894 B71-10508 09
 SINDA, Systems Improved Numerical Differencing Analyzer
 MSC-13805 B72-10736 09
 Measurement of temperature profiles in hot gases and flames
 LEWIS-12055 B74-10060 03

TEMPERATURE SCALES

Uniform data system standardizes technical computations and the purchasing of commercially important gases
 NUC-10549 B70-10333 04
 Low cost, logarithmic mass flow computer
 LEWIS-11001 B71-10407 06
 Psychrometric chart for physiological research
 ARC-10394 B71-10470 03
 Low temperature scale for a 1 to 20 degree Kelvin region
 AEC-10007 B72-10146 03
 A compact battery powered digital thermometer
 MSC-14084 B72-10545 02

TEMPERATURE SENSORS

Metabolic breath analyzer
 M-FS-21415 B71-10466 05
 Multichamber controllable heat pipe
 ARC-10199 B71-10526 03
 Microminiaturized, biopotential conditioning system (MBCS)
 JSC-14180 B73-10236 02
 Safety monitoring system for radioisotope thermoelectric generators
 NPO-13285 B73-10352 02

TEMPERING

Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
 M-FS-14385 B70-10243 04
 Integrated turbine-compressor provides air flow for cooling
 HQ-10442 B70-10295 07
 Influence of heat treatment on mechanical properties of 300M steel
 MSC-14792 B75-10271 04

TEMPLATES

Universal router concept
 M-FS-20756 B70-10313 07
 Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 B71-10247 08
 Twistable mold for helicopter blades
 ARC-10682 B72-10432 08
 Alignment fixture for precision cutting of printed-wiring boards
 LANGLEY-11658 B74-10290 01

TENSILE CREEP

Tensile creep-rate of pyrolytic carbon
 NPO-11254 B70-10100 04

TENSILE DEFORMATION

Bileaf mechanical strain gage
 ARC-10303 B72-10197 07

TENSILE PROPERTIES

Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
 M-FS-18753 B70-10364 04
 New type of nonflammable paper
 MSC-13432 B70-10546 04
 Promising born/graphite/resin composites
 M-FS-21126 B71-10217 04
 Evaluation of omniweave reinforcement for composite fabrication
 M-FS-20946 B71-10245 04
 Computer design of extension springs
 M-FS-24073 B71-10473 09
 Joint preload properties of structural threaded fasteners
 M-FS-21453 B71-10531 08
 Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
 LEWIS-12562 B75-10246 04

TENSILE STRENGTH

Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03
 Electrical resistance determination of actual contact area of cold welded metal joints
 HQ-10472 B70-10084 04
 Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
 M-FS-18712 B70-10092 04
 The columbium-hydrogen system and hydrogen embrittlement of columbium
 M-FS-18659 B70-10146 04
 Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
 LEWIS-10515 B70-10185 04
 Effects of decontamination, sterilization, and thermal vacuum on polymeric products
 NPO-11250 B70-10208 04

Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
 M-FS-18790 B70-10213 04
 Biaxial prestressing of brittle materials
 M-FS-20272 B70-10316 04
 Effects of hydrogen on ELI titanium alloy Ti-5Al-2.5Sn
 M-FS-18815 B70-10366 04
 Improved heat-resistant garments
 MSC-12109 B70-10544 08
 Flexible electrical conductors for high-temperature switchgear
 LEWIS-11109 B70-10569 01
 Ultra thin gage plastic film
 LEWIS-11276 B71-10135 08
 Synthesis of fluorinated organic compounds using oxygen difluoride
 NPO-12061 B71-10154 04
 New understanding of fiber composite materials
 NPO-11605 B71-10161 04
 Method for determining failure potential of pressure vessels
 M-FS-20564 B71-10270 06
 Explosive bonped TZM-wire-reinforced C129Y columbium composites
 M-FS-20925 B71-10356 04
 Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
 LEWIS-11116 B71-10397 06
 High-strength large-diameter carbon-base fibers
 LEWIS-11167 B71-10403 04
 Axisymmetric and cylindrical isostable structures - A concept
 NPO-12049 B71-10446 06
 Cable insulation cut-through tester
 M-FS-20114 B71-10459 08
 Beryllium thin films for resistor applications
 ARC-10485 B72-10021 01
 Development of a polyimide for use as a temperature and solvent resistant sealant
 M-FS-21325 B72-10262 04
 High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
 LEWIS-11634 B72-10344 04
 Adhesive for aluminum withstands cryogenic temperatures
 M-FS-16848 B72-10346 04
 Leaching of nitroso rubber material removes uncured polymer
 MSC-17185 B72-10449 04
 A monostain test apparatus
 M-FS-24221 B72-10679 06
 High-temperature tensile tester for ceramics
 ARC-10822 B74-10244 04
 High-strength alloy with resistance to hydrogen-environment embrittlement
 M-FS-19234 B74-10265 04
 Influence of heat treatment on mechanical properties of 300M steel
 MSC-14792 B75-10271 04

TENSILE STRESS

Stress corrosion cracking evaluation of precipitation-hardening stainless steel
 M-FS-20667 B70-10140 04
 Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
 M-FS-18427 B70-10199 04

- The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
- Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
- Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
- Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08
- Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
- Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
- Metal-shearing energy absorber
HQ-10638 B71-10503 07
- Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
- Experimental study of surface cracks
MSC-14032 B72-10019 04
- Bileaf mechanical strain gage
ARC-10303 B72-10197 07
- TENSILE TESTS**
- Testing filamentary composites
HQ-10268 B70-10004 04
- An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01
- Effects of hydrogen on ELI titanium alloy Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
- Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04
- Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08
- X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
- Strain compatibility tests for sprayed foam cryogenic insulation
M-FS-16063 B70-10423 04
- Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
- Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04
- Alloy vapor deposition using ion plating and flash evaporation
LEWIS-11262 B71-10199 08
- Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
- Specimen for high-temperature tensile tests
ARC-10531 B72-10028 04
- Quick release acoustic sensor holding fixture
MSC-17457 B72-10076 02
- Dispersion-strengthened chromium alloy
LEWIS-10982 B72-10378 04
- A tool for measuring elevator cable tension
KSC-10708 B72-10509 07
- TENSION**
- Perload indicating turnbuckle
M-FS-21488 B72-10355 07
- TENSORS**
- Calculation of the inertia tensor and center of gravity of complex bodies
NPO-10827 B70-10158 09
- ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
- TERBIUM**
- Improved intensifying screen reduces X-ray exposure
AEC-10090 B72-10232 03
- TERMINAL VELOCITY**
- Optimized braking of landing vehicles with atmospheric drag
NPO-11402 B72-10084 06
- TERMINALS**
- Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
- TERMINATOR LINES**
- New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03
- TERRAIN ANALYSIS**
- Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
- Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
- TEST CHAMBERS**
- Simple chamber facilitates chemiluminescent detection of bacteria
LANGLEY-10705 B70-10525 05
- Cable insulation cut-through tester
M-FS-20114 B71-10459 08
- Distribution and metering system for soil samples
ARC-10429 B71-10481 07
- Reusable anaerobic system for microbiological studies - A concept
MSC-13920 B71-10495 05
- Miniature carbon dioxide sensor
MSC-13332 B71-10536 03
- Particle detection by a light-scattering technique
ARC-10384 B72-10160 03
- Baffle to confine glow discharge in ion pump
M-FS-21575 B72-10324 03
- Efficient baffle prevents oil backstreaming in diffusion pumps
LRL-10025 B72-10475 07
- Sterile chamber operation with bio-isolator suit system
LANGLEY-11054 B72-10547 05
- A versatile flammability test chamber
KSC-10126 B73-10111 06
- Autoignition test cell with flexible atmosphere control
KSC-10198 B73-10113 04
- Apparatus for study of plasmas at elevated temperatures
ARC-10958 B75-10285 03
- TEST EQUIPMENT**
- A simple tester provides resonant frequency measurements of ferrite devices
NPO-10678 B70-10033 01
- Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
- Solenoid valve performance characteristics studied
M-FS-12458 B70-10066 07
- Testing device for verifying the performance of digital recorders
KSC-10300 B70-10149 01
- A miniature 1/4-inch diameter 24-pin plug and receptacle
LANGLEY-10607 B70-10249 01
- Color identification testing device
KSC-10278 B70-10264 01
- Portable vibration exciter
KSC-10069 B70-10339 07
- Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
- Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06
- Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05
- A power semiconductor test circuit with reduced power requirements
LEWIS-11175 B70-10498 01
- Compression springs used for vibration isolation
NPO-11012 B70-10523 07
- Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
- Electrothermal fracturing of tensile specimens
NUC-10185 B70-10566 07
- Deadweight calibration of pressure gages without contamination
M-FS-18690 B70-10586 07
- Frost as an insulator
NUC-11039 B70-10593 03
- Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 B70-10612 04
- Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
- Peak acceleration limiter
NPO-10556 B72-10007 01
- Software control for large scale on-board checkout: A concept
MSC-13977 B72-10015 09
- Visual sensitivity tester
ARC-10329 B72-10203 05
- Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05
- Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 B72-10249 04
- Flow equation for porous plug and capillary tube flow restrictors
GSFC-11387 B72-10289 06
- Nondestructive testing of microtab welds
ARC-10176 B72-10296 02
- A simple tachometer circuit
ARC-10603 B72-10308 01
- Remote weighing device
M-FS-21556 B72-10325 07
- Small turbing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
- Simple turbine balancing test apparatus
LEWIS-11658 B72-10377 07
- Expandable coating cocoon leak detection system
M-FS-21848 B72-10380 06
- Two-axis leveling detector system
M-FS-21344 B72-10392 02
- Rapid evaluation of reverse-osmosis membranes
ARC-10659 B72-10413 04

Technique for increasing yield of trifluoroni-trosomethane-tetrafluoro-ethylene copolymer
 ARC-10566 B72-10418 04
 Multiple reaction mass and isolation system
 M-FS-24119 B72-10441 06
 High temperature permeameter for measuring magnetic properties
 LEWIS-11609 B72-10443 03
 New meter probes provide protection from high current power sources at potentials up to 600 volts
 LANGLEY-10804 B72-10455 01
 Constant tension device for gravity simulation
 M-FS-21618 B72-10466 06
 A system for early warning of bearing failure
 M-FS-21877 B72-10494 06
 Magnetic circuitry mutual coupling probe
 M-FS-21664 B72-10535 02
 Micro-scale crease-and-fold apparatus
 NPO-12029 B72-10552 06
 Helium window for shock-tube monochromators
 NPO-11852 B72-10556 03
 Oxygen plasmas used to synthesize superoxides
 ARC-10686 B72-10570 04
 Laser mass spectrometer
 ARC-10687 B72-10571 03
 Oscillation of laser-beam intensity as observed with beam splitters
 ARC-10694 B72-10572 03
 Leak test system
 M-FS-21788 B72-10576 06
 A transmitting and reflecting diffuser for ultraviolet light
 LANGLEY-10385 B72-10611 03
 Polyimide bonded graphite fluoride: A new long life solid lubricant coating
 LEWIS-11864 B72-10628 04
 Magnetometer uses bismuth-selenide
 LEWIS-11632 B72-10629 03
 Use of small turbine-type flowmeters to measure flow in large pipes
 LEWIS-11851 B72-10631 06
 A monostrain test apparatus
 M-FS-24221 B72-10679 06
 New detection method for rolling element and bearing defects
 M-FS-21911 B72-10689 06
 Improved ultrasonic biomedical measuring apparatus
 ARC-10597 B72-10695 05
 Automatic method of measuring silicon-controlled-rectifier holding current
 LEWIS-11898 B72-10752 02
 Prototype ultrasonic instrument for quantitative testing
 M-FS-22350 B73-10051 02
 Detector for inspection of fire alarms
 GSFC-11600 B73-10128 06
 Synchro phase selector aid
 LANGLEY-11282 B73-10160 01
 Signal conditioner test set
 KSC-10750 B73-10189 02
 A multidegree-of-freedom vibrational apparatus
 GSFC-11302 B73-10332 06
 Poppet valve tester
 LEWIS-11655 B73-10415 07
 Versatile electronic load
 NPO-13202 B73-10458 03

Low-cost, portable fire hose tester
 LEWIS-12365 B75-10003 06
TEST FACILITIES
 Instruction manuals for radiographic nondestructive testing
 M-FS-21350 B71-10156 06
 Velocity accelerator for particles
 NPO-11349 B72-10082 03
 Standard environmental testing practices
 NPO-11567 B72-10101 02
 Pressure-probe assembly for wind tunnels
 ARC-10569 B72-10248 03
 Balanced-bellows spirometer
 XAC-01547 B72-10279 05
 Right angle mounted cold trap
 GSFC-11323 B72-10436 06
 Laser system detects tower deflections
 LEWIS-11870 B73-10243 02
 Facility for testing solar cells
 NPO-11761 B74-10099 02
 Improved xenon lamp for solar simulators: A concept
 NPO-13128 B74-10195 03
 Two-directional active damper
 LANGLEY-11815 B75-10259 06
TEST FIRING
 Volumetric calibration of a propellant utilization system
 M-FS-14943 B70-10156 06
 High-temperature oxidation and erosion-resistant refractory coatings
 LEWIS-11221 B70-10634 04
 Cast segment evaluation
 M-FS-21354 B71-10363 08
TEST STANDS
 Prevention of damage to delicate connectors during mounting of heavy engines for testing
 NUC-10322 B71-10044 06
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
 Fatigue testing device
 LANGLEY-10426 B73-10047 07
TESTING TIME
 Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
 LANGLEY-10841 B71-10493 07
TESTS
 High-resolution spectral analysis
 NPO-10748 B70-10039 01
 Digital-coded matrix system simplifies design and construction of flow charts
 MSC-13539 B71-10086 09
 High-temperature, long-life polyimide seals for hydraulic actuator rods
 LEWIS-11212 B71-10098 07
 Strain gage performance above 1033 K
 M-FS-18831 B71-10225 04
 SRC seal testing
 M-FS-22426 B73-10199 01
TETRABUTYLS
 Initiation of polymerization by tetrabutylammonium p-lithophenoxide
 ARC-10553 B72-10223 04
TETRAHEDRONS
 ELAS8 - Computer program for linear structure equilibrium problems
 NPO-11555 B71-10185 09
TETRAPHENYLS
 Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
 M-FS-14947 B71-10303 04

TETRYL
 Explosive bonded TZM-wire-reinforced C129Y columbium composites
 M-FS-20925 B71-10356 04
TEXTBOOKS
 FORTRAN programming - A self-taught course
 LANGLEY-10738 B71-10052 09
 Elements of orbit-determination theory - Textbook
 NPO-11466 B71-10425 03
TEXTURES
 Microflora in soils of desert regions
 NPO-11215 B70-10253 05
THALLIUM
 High-temperature, long-life thyratron
 LEWIS-11327 B72-10134 01
THALLIUM COMPOUNDS
 High efficiency optical beamsplitter designed for operation in the infrared region
 GSFC-10721 B70-10211 02
THEODOLITES
 A simple dead-reckoning navigational system
 M-FS-21165 B72-10409 02
THEOREM PROVING
 Computation of group table alphanumeric display
 LEWIS-11346 B71-10373 09
THEOREMS
 A method for rapidly evaluating the linearity of calibration data
 M-FS-14834 B70-10085 03
THEORETICAL PHYSICS
 Improvements of Zeyded method for calculating flutter of flat panels
 M-FS-20955 B72-10399 06
 Zeros of certain cross products of Bessel functions of fractional order
 LEWIS-12221 B74-10012 03
THEORIES
 Exhaust cloud rise and diffusion in the atmosphere
 M-FS-21119 B71-10111 03
THERAPY
 Zero-g simulation system for therapeutic application
 M-FS-14671 B71-10034 04
 New reaction tester accurate within 56 microseconds
 MSC-13604 B72-10031 05
 Weight simulator
 ARC-10100 B72-10046 05
 Therapeutic hand-exercising device with cycling pressure value
 LANGLEY-11579 B74-10140 05
THERMAL ABSORPTION
 Remote sunfall monitor: A concept
 M-FS-22943 B74-10149 03
 Solar residential heating and cooling system
 M-FS-23260 B75-10165 06
THERMAL BUCKLING
 Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
 LANGLEY-11533 B74-10204 09
THERMAL CONDUCTIVITY
 Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 B70-10106 03
 Passive heat transfer control
 HQ-10041 B70-10111 03
 Ultrasonic propagation in gases at high temperatures
 HQ-10498 B70-10137 03

SUBJECT INDEX

Inexpensive net solar flux radiometer
HQ-10087 B70-10296 03

High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04

Improved heat shield/radiator
NPO-11105 B70-10318 03

Open-celled polyurethane foam
KSC-10517 B70-10349 04

Simple method for predicting viscosity of gas mixtures
LEWIS-11060 B70-10361 04

Intumescent coatings as fire retardants
ARC-10099 B70-10450 04

A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03

Frost as an insulator
NUC-11039 B70-10593 03

Rugged, low-conductance, heat-flow probe
MSC-13443 B70-10622 03

Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03

Measurement of surface roughness slope
LEWIS-11080 B70-10722 01

Performance map of a heat pipe charged with ammonia
NPO-11454 B70-10726 03

FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09

Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08

Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04

Thermal conductivity of gaseous and liquid hydrogen
NUC-10558 B71-10105 04

Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 B71-10168 08

Water electrolysis module
ARC-10246 B71-10203 03

Durable cathodes for high-power inert-gas arcs
LEWIS-11162 B71-10264 03

Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04

Granular two-phase insulation systems
NPO-12068 B71-10290 04

Reduction of valve leakage - A concept
NPO-12003 B71-10315 07

Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03

Cast segment evaluation
M-FS-21354 B71-10363 08

Fabrication techniques for thorium-dispersed /TD/ nickel
LEWIS-11240 B71-10369 08

Steady temperature and density distributions in a gas containing heat sources
LEWIS-10905 B71-10398 09

Exothermic brazing units
M-FS-21435 B71-10467 08

Method of determining thermal conductivity in multi-layer insulation systems
M-FS-20213 B72-10154 03

Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03

Battery cell thermal-conductive coating increases efficiency
LANGLEY-10963 B73-10237 01

New method for determining thermophysical properties of test specimens
LANGLEY-11053 B73-10447 04

Throttleable heat pipe
ARC-10848 B74-10173 03

Fabrication of porous plugs for control of liquid helium
M-FS-23218 B75-10163 04

THERMAL CONDUCTORS

An electrohydrodynamic heat pipe
ARC-10601 B72-10251 03

Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03

Soft, thermally conductive material
LANGLEY-10850 B74-10132 04

THERMAL CONTROL COATINGS

Thermal and structural modeling of superinsulation
M-FS-20324 B71-10019 02

Improved thermal paint formulation
M-FS-14706 B71-10180 03

Thermal scale modeling
M-FS-21268 B71-10432 03

High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04

Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04

Improved magnesia for thermal control coatings
ARC-10677 B72-10424 04

Investigation of environmental effects on coatings for thermal control
M-FS-21932 B72-10596 04

Improved zinc oxide thermal control coatings
NPO-11139 B72-10711 04

Vacuum-stripped silicone binder for thermal-control paint
M-FS-21397 B73-10060 04

Thin film thermoelectric devices as thermal control coatings: A study
M-FS-21384 B73-10153 04

Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04

Refractory porcelain enamel passive-thermal-control coating for high-temperature superalloys
M-FS-22324 B73-10215 04

Battery cell thermal-conductive coating increases efficiency
LANGLEY-10963 B73-10237 01

High-temperature, reusable surface insulation system
MSC-14688 B75-10042 04

THERMAL CYCLING TESTS

A new low-expansion nonflammable printed circuit board
M-FS-20408 B70-10154 01

Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 B70-10241 08

Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn B70-10366 04

THERMAL ENVIRONMENTS

Nondestructive assessment of penetration of electron-beam welds
MSC-15955 B70-10466 08

Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04

Environmental effects on silicon solar cells
NPO-11475 B71-10282 02

THERMAL DEGRADATION

Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04

A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02

THERMAL DIFFUSION

Aluminum foil interconnects for solar cell panels
ARC-10374 B72-10058 08

THERMAL DISSOCIATION

Multiple focusing magnets used for velocity selection of atoms
GSFC-10128 B70-10581 03

Catalyst for sodium chlorate decomposition
ARC-10584 B72-10305 04

High-power CW laser using hydrogen-fluorine reaction
NPO-13623 B75-10183 03

Using permeable membranes to produce hydrogen and oxygen from water
MSC-12600 B75-10314 04

THERMAL EMISSION

A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01

New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 B70-10187 03

Radioisotope heater
ARC-10791 B74-10051 03

THERMAL ENERGY

Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03

The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 B71-10109 06

Literature review and experimental investigation of heat pipes
M-FS-21074 B71-10353 03

Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06

Differential input preamplifier
ARC-10489 B72-10165 01

New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08

Aerotherm charring materials ablation computer program
LEWIS-11854 B73-10065 09

Metal tube used as solar engine
ARC-10461 B73-10493 03

Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03

Large-scale solar thermal collector concepts
M-FS-23167 B75-10098 03

THERMAL ENVIRONMENTS

Mounting, support, and isolation of various components of a hydrogen maser
HQ-10563 B70-10032 02

Effects of decontamination, sterilization, and thermal vacuum on polymeric products

NPO-11250 B70-10208 04

Improved heat-resistant garments

MSC-12109 B70-10544 08

Saturn S-2 base environment for flight evaluation

M-FS-16597 B70-10555 09

Effects of the thermal sterilization procedure on polymeric products

NPO-11688 B71-10362 04

THERMAL EXPANSION

Thermal-difference compensation for structural members

M-FS-20433 B70-10014 07

High temperature rare earth solid lubricants

LEWIS-10983 B70-10175 04

Prevention of cracking of soldered joints in electronic assemblies

M-FS-20544 B70-10241 08

A temperature-controlled fluid flow regulator

M-FS-14259 B70-10283 07

Thermally induced oscillations in fluid flow

M-FS-20449 B70-10299 03

Low heat-gain cryogenic-liquid transfer system

MSC-15165 B70-10306 07

Solid state bistable power switch

ERC-10290 B70-10383 01

Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide

ERC-10256 B70-10444 04

Visible light electroluminescent diodes of indium-gallium phosphide

ERC-10303 B70-10474 01

Glass-to-metal bonding process improves stability and performance of semiconductor devices

ERC-10264 B70-10477 01

Method of joining metals of significantly different expansion rates

NPO-12076 B71-10028 08

Producing graphite with desired properties

NUC-11001 B71-10042 04

A concept for improving the dimensional stability of filamentary composites in one direction

LANGLEY-10443 B71-10061 04

Process for producing molybdenum foil and collapsible tubing

GSFC-10008 B71-10073 08

Fluid slip ring transfers coolant to rotating equipment

MSC-13451 B71-10083 07

Determination of gas volume trapped in a closed fluid system

MSC-15685 B71-10094 06

High-temperature pump-motor assembly

LEWIS-10256 B71-10100 07

Parallel-gap welding for joints between copper conductors and Kovar

M-FS-21224 B71-10168 08

Preparation of homogeneous vitreous materials for electronic and optical devices

HQ-10670 B71-10172 04

Differential expansion fitting for cryogenic liquid tanks

LEWIS-11260 B71-10268 08

Improved brazing technique for pyrolytic graphite

NPO-12026 B71-10293 08

Reduction of valve leakage - A concept

NPO-12003 B71-10315 07

Hermetic isolation valves

ARC-10505 B72-10013 06

Universal inverted flexure

ARC-10345 B72-10122 07

Wide-range dynamic pressure sensor

ARC-10263 B72-10196 03

High-temperature ceramic-to-ceramic seals

ARC-10319 B72-10199 04

Thermal analog device reduces machining errors

AEC-10080 B72-10237 08

Thermally stable structural framework

ARC-10612 B72-10252 08

Titanium reinforced boron polyimide composite

M-FS-21916 B72-10353 04

Watertight low-cost electrical connector

LEWIS-11552 B72-10506 01

Mechanically and thermally stable maser cavity resonator

HQ-10790 B72-10523 01

Graphite/polyimide laminates with near-zero thermal expansion

JSC-17662 B73-10254 04

Thermally actuated valve

NPO-11846 B73-10347 06

Heated bimetal strip prevents damage of bearings by vibration

NPO-11870 B73-10348 06

Mechanical solar motor: A concept

M-FS-23062 B74-10292 07

High-temperature capacitive strain measurement system

FRC-10053 B75-10069 01

THERMAL FATIGUE

Creep-fatigue analysis by Strainrange Partitioning

LEWIS-12072 B73-10314 04

Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography

LEWIS-12502 B75-10138 03

THERMAL INSULATION

Improved heat shield/radiator

NPO-11105 B70-10318 03

High temperature ion source

ERC-10197 B70-10379 03

Evaluation of two designs for cryogenic insulation

M-FS-14740 B70-10415 03

Molecular sieves control contamination and and insulate in thermal regenerators

- A concept

GSFC-10910 B70-10424 07

High-temperature "hydrostatic" extrusion

NPO-10811 B70-10428 08

High-temperature electric stator

LEWIS-10889 B70-10459 01

Improved heat-resistant garments

MSC-12109 B70-10544 08

The low-cost cryostat

NUC-11034 B70-10592 03

Resonance tube igniter

LEWIS-11219 B70-10618 04

Toroidal mirrors provide virtual walls for breaks in light pipes

ARC-10031 B70-10632 03

Lightweight, self-evacuated insulation panels

LEWIS-90361 B70-10646 03

Vacuum-jacketed rotary joints for pipelines

KSC-10519 B71-10018 07

Inexpensive high-temperature furnace for thermocouple calibration

NUC-10372 B71-10046 03

System accurately controls pressure in cryogenic tanks

LEWIS-11329 B71-10118 03

Self-replaceable thermocouple for molten steel bath - A concept

NUC-10223 B71-10125 01

Improved insulating materials effective at extremely high temperatures

NPO-12067 B71-10289 04

Granular two-phase insulation systems

NPO-12068 B71-10290 04

Improved smoke generator for low-speed wind tunnels

LANGLEY-10885 B71-10337 06

Opacified fibrous thermal insulation

LEWIS-11235 B71-10406 03

Microorganism sample device

LANGLEY-10258 B71-10487 05

Polyimide foams provide thermal insulation and fire protection

ARC-10464 B72-10300 04

Deflection resistance indicator

M-FS-24010 B72-10401 04

Turbopump thermodynamic cooling

M-FS-21597 B72-10408 06

Overflow sensor for cryogenic-fluid vessels

NPO-10619 B72-10554 03

Gas-flow restrictor

NPO-10117 B72-10703 03

Evaluation of thermal insulation materials

NPO-11586 B73-10020 04

Fluid insulation to prevent ice formation in heat exchangers

LEWIS-11959 B73-10028 06

Effects of environmental exposure on cryogenic thermal insulation materials

LEWIS-12007 B73-10213 04

Detection of cracks in surface insulation

MSC-14187 B74-10095 04

New insulation attachment method eliminates compatibility bondline stresses

MSC-12615 B74-10269 07

Low-density polybenzimidazole foams for thermal insulation and fire protection

ARC-10823 B75-10056 04

Method of attaching insulation tiles

MSC-12619 B75-10104 04

Cryogenic line insulation made from prefabricated polyurethane shells

MSC-19523 B75-10110 06

Transmission line for S-band masers

NPO-13504 B75-10126 03

Ceramic thermal protective coating withstands hostile environment of rotating turbine blades

LEWIS-12554 B75-10290 04

Repair of damaged insulation tiles

MSC-19549 B75-10321 04

Fast semiautomatic dimensional test set and data logger

MSC-19554 B75-10322 07

THERMAL NEUTRONS

Neutron-image intensifier

ARG-10249 B70-10240 03

THERMAL NOISE

COPTRAN - A method of optimum communication systems design

ERC-10273 B70-10501 09

- Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
A pseudo random-access synchronous meteorological satellite system
GSFC-10895 B71-10220 02
- THERMAL POLLUTION**
Effect of thermal discharges on the mass energy balance of Lake Michigan
AEC-10013 B72-10004 03
Hydraulic modeling of heat dispersion in large lakes
AEC-10003 B72-10039 03
- THERMAL PROTECTION**
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
Investigation to identify paint coatings resistive to microorganism growth
M-FS-20458 B71-10310 04
Superior cryogenic insulation developed
M-FS-21560 B72-10187 04
Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05
Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
Analytic model for assessing thermal performance of SCUBA divers
ARC-10927 B75-10029 09
- THERMAL RADIATION**
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 B70-10519 02
Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
Radiation view factor program
M-FS-21075 B71-10106 09
Determination of radiation interchange factors
MSC-13475 B71-10295 09
Program for determination of radiation interchange factors
MSC-17563 B72-10071 09
Performance of silicon solar cell assemblies
NPO-11847 B72-10186 01
Zone radiometer measurements on a model rocket exhaust plume
M-FS-21693 B72-10357 02
- THERMAL REACTORS**
Carbon monoxide oxidation rates computed for automobile thermal reactor conditions
LEWIS-11638 B72-10137 04
- THERMAL RESISTANCE**
Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
Improved heat-resistant garments
MSC-12109 B70-10544 08
Thermal and structural modeling of superinsulation
M-FS-20324 B71-10019 02
Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
- Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08
Durable cathodes for high-power inert-gas arcs
LEWIS-11162 B71-10264 03
Coatings from copolymers of tetraphenoxysilane and p,p(1)-biphenol
M-FS-14947 B71-10303 04
Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
Feedback control of variable conductance heat pipes
ARC-10460 B72-10169 03
Fire retardant polyisocyanurate foam
ARC-10280 B72-10269 04
Thermal contact resistance in a non-ideal joint
M-FS-21775 B73-10105 03
Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08
- THERMAL SHOCK**
Biaxial prestressing of brittle materials
M-FS-20272 B70-10316 04
X-connectors for tubing - Feasibility study
M-FS-20827 B70-10418 07
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Environmental effects on silicon solar cells
NPO-11475 B71-10282 02
Isotropic pyrolytic carbons
ARC-10532 B72-10029 04
Optical bonding agents for severe environments
ARC-10459 B72-10063 04
Simple, reproducible methods for thermal shock testing of brittle materials
NUC-11020 B72-10228 06
An improved apochromatic wedge utilizing optical molecular contact bonding
GSFC-11082 B72-10388 03
- THERMAL SIMULATION**
Thermal scale modeling
M-FS-21268 B71-10432 03
- THERMAL STABILITY**
High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08
Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
Low-temperature radiation-resistant material for ball-bearing retainers
NUC-10058 B70-10576 04
Bonding of strain gages to fiber reinforced composite plastic materials
LEWIS-11151 B70-10630 01
High-temperature oxidation and erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
- Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 B71-10489 04
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04
Driver circuit for inductive loads
ARC-10073 B72-10268 01
Devolatilization of polymer resins
GSFC-11358 B72-10280 04
Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04
Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01
New type of trifunctional alcohol
NPO-10714 B72-10553 04
Magnetometer uses bismuth-selenide
LEWIS-11632 B72-10629 03
High temperature gallium phosphide rectifiers
LEWIS-11804 B72-10673 01
Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04
Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
Temperature compensation of digital inertial sensors
NPO-13044 B74-10106 02
Thermally-stable, syntactic pyrrone foams
LANGLEY-11325 B74-10135 06
Improved circuit-board interconnectors
MSC-12661 B74-10239 01
Implementation of a self-controlling heater: A concept
GSFC-11752 B74-10241 06
Temperature-stable Gunn-diode oscillator
M-FS-23242 B75-10306 01
Compound heat pipe operates over broad temperature range
M-FS-23329 B75-10313 06
- THERMAL STRESSES**
Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
High temperature ion source
ERC-10197 B70-10379 03
Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01
FEATS - Finite element thermal stress analysis of plane or axisymmetric solids
NUC-10242 B71-10038 09
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06

- Analysis of thermal stress and metal movement during welding
M-FS-20984 B72-10333 04
- Improved high-temperature gimbal joint
LEWIS-11705 B72-10489 06
- Structural analysis of viscoelastic materials under thermal and pressure loading
NPO-11727 B73-10301 09
- The static nonlinear analysis of shells of revolution (SNASOR II)
JSC-14495 B73-10445 09
- Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04
- Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
LANGLEY-11533 B74-10204 09
- Thermoelastic analysis of solar cell arrays and their material properties
NPO-13458 B74-10301 03
- Computer program for numerical analysis of stiffened shells of revolution
M-FS-23027 B75-10094 09
- RETSCP-A computer program for analysis of rocket engine thermal strains with cyclic plasticity
LEWIS-12388 B75-10186 09
- THERMAL VACUUM TESTS**
- High-temperature electric stator
LEWIS-10889 B70-10459 01
- Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 B70-10612 04
- Reduced preparation time for thermal vacuum chamber tests
M-FS-24171 B73-10163 03
- THERMALIZATION (ENERGY ABSORPTION)**
- Study of second breakdown in power transistors using infrared techniques
M-FS-20748 B71-10021 01
- THERMIONIC CATHODES**
- Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04
- THERMIONIC CONVERTERS**
- Load cell for thermionic converter tests
LEWIS-11068 B70-10470 01
- Thermionic triode generates ac power
ERC-10284 B70-10499 01
- Metal-to-ceramic seals - A literature survey
NPO-11430 B71-10116 08
- Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
- Radioisotope thermal generator (RTG) power conditioner
LANGLEY-11313 B74-10022 03
- THERMIONIC DIODES**
- Compact, electromagnetic multiple-stream pump for liquid metals - Design concept
NPO-10755 B70-10090 07
- Metal-to-ceramic seals - A literature survey
NPO-11430 B71-10116 08
- Improved control for nuclear/thermionic power source: A concept
NPO-13114 B74-10167 03
- THERMIONIC EMISSION**
- Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
- THERMIONIC POWER GENERATION**
- Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
- THERMIONICS**
- Metal-to-ceramic seals - A literature survey
NPO-11430 B71-10116 08
- THERMISTORS**
- Constant current source for converting absolute temperatures to analog voltages
NPO-10733 B70-10164 02
- Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01
- A conceptual current surge protector for incandescent lamps
M-FS-16658 B70-10483 01
- A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
- Polarographic carbon dioxide transducer amplifier
MSC-13728 B71-10090 02
- Implanted telemeter for electrocardiogram and body temperature
XAC-08505 B72-10035 05
- Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03
- Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01
- An ingestible temperature-transmitter
ARC-10583 B72-10275 01
- Microminiature gas chromatographic column
ARC-10594 B72-10306 04
- A thermocouple thermode for small animals
ARC-10550 B72-10559 05
- Flexible temperature probe for biological systems
ARC-10796 B73-10498 05
- Valve degradation detector
ARC-10850 B74-10117 03
- Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05
- THERMOCHEMICAL PROPERTIES**
- Aerotherm chemical equilibrium (ACE) computer program
LEWIS-11722 B72-10739 09
- Double-discharge copper-vapor laser
NPO-13348 B75-10123 03
- Laser using lead chloride vapor
NPO-13615 B75-10128 03
- THERMOCHEMISTRY**
- Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 B70-10194 08
- THERMOCOUPLES**
- Improved low cost ac-to-dc converter
NPO-11055 B70-10076 01
- Passive heat transfer control
HQ-10041 B70-10111 03
- Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08
- Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 B70-10194 08
- Cryogenic thermocouple calibration tables
NUC-10551 B70-10197 03
- Precision control system for engine fuel
NPO-12017 B70-10244 07
- Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
- Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
NUC-10227 B70-10356 03
- Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
- High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
- High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
- Resonance tube igniter
LEWIS-11219 B70-10618 04
- Thermocouple installation in thin-walled tubes
LEWIS-11222 B70-10655 01
- Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03
- Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01
- Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
- Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
- Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 B71-10173 07
- Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01
- Strain gage performance above 1033 K
M-FS-18831 B71-10225 04
- Soldering iron temperature indicator
NPO-11545 B72-10098 02
- High voltage protection network
ARC-10197 B72-10119 02
- Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
- Comparison of catalyst activity
ARC-10493 B72-10201 04
- Thermal analog device reduces machining errors
AEC-0080 B72-10237 08
- Technique for producing wind-tunnel heat-transfer models
ARC-10658 B72-10349 08
- Right angle mounted cold trap
GSFC-11323 B72-10436 06
- Thermocouple tape
LEWIS-11072 B72-10515 04
- A thermocouple thermode for small animals
ARC-10550 B72-10559 05
- A multielement probe for coincident temperature and pressure measurements
LEWIS-11775 B72-10716 06
- A new high temperature noble metal thermocouple pairing
LEWIS-12545 B75-10245 03
- THERMODYNAMIC CYCLES**
- Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
- Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09

THERMODYNAMIC EFFICIENCY

Computer program for thermodynamic analysis of open-cycle multishaft power system
LEWIS-12324 B75-10002 09

THERMODYNAMIC PROPERTIES

Preparation of highly fluorinated diols containing ether linkages.

NPO-10768 B70-10353 04

Improved linings for integrating spheres
MSC-12237 B70-10413 03

Digital program analyzes supersonic flow field within bell-shaped rocket nozzles

M-FS-14292 B70-10597 09

Condensation of wet vapors in turbines
NPO-10773 B70-10613 09

AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09

Updated, expanded, fluid properties handbook

M-FS-21169 B71-10078 04

Flame resistant elastic elastomeric fibers

MSC-13923-4 B72-10005 04

Closed-cycle power supply for fluidic control systems

ARC-10480 B72-10163 06

Performance of silicon solar cell assemblies

NPO-11847 B72-10186 01

Improved thermally conducting electron transfer polymers

GSFC-11304 B72-10291 04

Graphite and boron-reinforced composite materials data summary

M-FS-21691 B72-10294 04

Polyimide foams provide thermal insulation and fire protection

ARC-10464 B72-10300 04

Turbopump thermodynamic cooling

M-FS-21597 B72-10408 06

Phosphonium chloride for thermal storage

ARC-10572 B72-10422 04

Chemical modification of poly(p-phenylene) for use in ablative compositions

ARC-10135 B72-10451 04

Floating zone process for drawing small diameter fibers of refractory materials

LEWIS-11380 B72-10491 04

Laser mass spectrometer

ARC-10687 B72-10571 03

Flexible thermal device

M-FS-21630 B72-10612 04

The weld-brazing metal joining process

LANGLEY-11072 B72-10683 08

Handbook on thermophysical properties of oxygen

LEWIS-11962 B73-10187 04

Computer program for calculation of thermodynamic and transport properties of complex chemical systems

LEWIS-11997 B73-10231 09

An equation of state for oxygen and nitrogen

JSC-14465 B73-10394 04

Computer program for calculating water and steam properties

LEWIS-12206 B74-10123 09

Properties of air and combustion products of fuel with air

LEWIS-12402 B75-10004 03

Film mounting method for thermomechanical analysis

LANGLEY-11330 B75-10072 04

Computer program for calculating water and steam properties

LEWIS-12519 B75-10187 09

Computer program for calculating thermodynamic and transport properties of fluids

LEWIS-12520 B75-10188 09

THERMODYNAMICS

A program for computing shock-tube gas dynamic properties

NPO-11068 B70-10133 09

Proceedings of the Third Southeastern Seminar on Thermal Sciences

M-FS-20627 B70-10135 03

Use of thermodynamic properties of metal-gas systems as low-pressure standards

LANGLEY-10452 B70-10223 03

Short-duration, transonic flow, variable-porosity test section

M-FS-20509 B70-10256 03

Manually operated elastomer heat pump

NPO-10677 B70-10270 03

Thermally induced oscillations in fluid flow

M-FS-20449 B70-10299 03

Variables in turbine erosion

M-FS-18677 B70-10325 03

High-temperature rapid-response thermocouple for reducing atmospheres

NUC-10530 B70-10564 03

Frost as an insulator

NUC-11039 B70-10593 03

The heat pipe - A simple, versatile, efficient heat transfer tool

NPO-11598 B71-10109 06

Improved method for calculating pump thermodynamic suppression head

M-FS-20852 B71-10239 07

Compressed gas handbook

KSC-10662 B71-10272 03

Analysis and design of a flat central finned-tube radiator

LEWIS-10893 B71-10399 09

Vibrating ribbon bolometer: A concept

XAC-10768 B72-10170 03

Variable boundary II heat conduction

LEWIS-10679 B72-10444 09

Solar powered absorption cycle heat pump using phase change materials for energy storage

M-FS-21927 B72-10615 06

Computer program for calculation of complex chemical equilibrium compositions

LEWIS-11714 B72-10718 09

Thermal-dynamic modeling study

LANGLEY-11309 B73-10076 06

A theoretical study of aerodynamic noise generation

M-FS-24167 B73-10209 03

Analyses of unsteady entropic-flow processes

M-FS-24475 B73-10482 03

Using permeable membranes to produce hydrogen and oxygen from water

MSC-12600 B75-10314 04

THERMOELASTICITY

Analysis of multilayered fiber composites

LEWIS-11347 B71-10372 09

THERMOELECTRIC COOLING

Survey of aircraft electrical power systems

LEWIS-11678 B72-10383 02

Solar powered absorption cycle heat pump using phase change materials for energy storage

M-FS-21927 B72-10615 06

Thermoelectrically-cooled quartz microbalance

M-FS-23101 B75-10076 04

THERMOELECTRIC GENERATORS

The effects of nuclear power generators upon electronic instrumentation

NPO-11217 B70-10272 03

Thermally cascaded thermoelectric generator

NPO-10753 B70-10280 03

Scintillation detector for carbon-14

ARC-10378 B71-10144 03

Compensation of voltage drops in solid-state switches used with thermoelectric generators

NPO-11388 B72-10138 01

Thermal-powered reciprocating pump

NPO-11417 B72-10723 06

Radioisotope thermal generator (RTG) power conditioner

LANGLEY-11313 B74-10022 03

THERMOELECTRIC MATERIALS

Thermally cascaded thermoelectric generator

NPO-10753 B70-10280 03

Resistivity and Hall measurements of thermoelectric materials

M-FS-20470 B71-10015 03

THERMOELECTRIC POWER GENERATION

High-temperature, long-term drift of platinum-rhodium thermocouples

LEWIS-11111 B70-10552 01

Safety monitoring system for radioisotope thermoelectric generators

NPO-13285 B73-10352 02

THERMOELECTRICITY

Cryogenic thermocouple calibration tables

NUC-10551 B70-10197 03

Metal alloy resistivity measurements at very low temperatures

NUC-10557 B71-10104 04

Reduction of valve leakage - A concept

NPO-12003 B71-10315 07

Magnetic-doped alloys with very large Seebeck coefficients

M-FS-21410 B72-10318 04

Thin film thermoelectric devices as thermal control coatings: A study

M-FS-21384 B73-10153 04

THERMOMETERS

A reliable liquid helium detector

LEWIS-11487 B72-10145 01

Magnetic-doped alloys with very large Seebeck coefficients

M-FS-21410 B72-10318 04

Thermally responsive mechanical actuator

GSFC-11697 B73-10208 04

THERMONUCLEAR POWER GENERATION

Development of superconductive magnets

LEWIS-11170 B70-10678 03

THERMOPHYSICAL PROPERTIES

Design curve for liquid helium storage vessels

LEWIS-11498 B72-10286 02

Computation of laminar heat transfer from gaseous plasmas in electromagnetic fields

NPO-11725 B72-10707 03

- Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G
MSC-11653 B72-10721 09
New method for determining thermophysical properties of test specimens
LANGLEY-11053 B73-10447 04
Automated electronic system for measuring thermophysical properties
LANGLEY-11883 B75-10160 03
- THERMOPILES**
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
Differential input preamplifier
ARC-10489 B72-10165 01
- THERMOPLASTIC RESINS**
Optically activated magnetic recording tape
GSFC-10275 B70-10247 01
Preparing thermoplastic aromatic polyimides
LANGLEY-11372 B73-10319 04
- THERMOPLASTICITY**
Eye point-of-regard system
ARC-10360 B71-10476 05
- THERMOREGULATION**
Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05
A thermocouple thermode for small animals
ARC-10550 B72-10559 05
Analytic model for assessing thermal performance of SCUBA divers
ARC-10927 B75-10029 09
- THERMOSETTING RESINS**
New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
A new vibration dampening adhesive
MSC-17668 B72-10284 04
New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08
- THERMOSTATS**
Thermostatic expansion valve improved by dual pneumatic modulation
KSC-10072 B70-10101 07
Pulse-width-modulated device for precision temperature control
NPO-11407 B72-10507 02
- THICK FILMS**
Applications of gap welding
M-FS-20715 B70-10155 08
A high yield neutron target
LEWIS-12058 B74-10066 03
Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 B75-10196 01
- THICK WALLS**
Flexible shielding system for radiation protection
LRL-10028 B72-10500 03
- THICKENERS (MATERIALS)**
Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 B72-10445 08
- THICKNESS**
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
- Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 B70-10582 06
Computer program optimizes design of nuclear radiation shields
LEWIS-10998 B71-10400 09
- THIN FILMS**
Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Applications of gap welding
M-FS-20715 B70-10155 08
Piezoelectric transducer
HQ-10548 B70-10157 01
Low power NAND gate
M-FS-14487 B70-10203 01
High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
Coercive force of thin magnetic films
NPO-10750 B70-10221 03
Coplanar interconnection module
ERC-10237 B70-10378 01
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
Thin film devices used as oxygen partial pressure sensors
XLA-06473 B70-10419 04
Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
Semiconductor cooling by thin-film thermocouples
ERC-10149 B70-10495 01
Extended-life magnetic recording heads
GSFC-10097 B70-10521 01
Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 B70-10551 04
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
Improved cover for cadmium sulfide solar cells
LEWIS-11003 B70-10584 01
Holographic analysis of thin films
M-FS-20823 B70-10654 08
Dual-wavelength system monitors deposition of films - A concept
M-FS-20675 B70-10658 03
Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04
Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
Ultra thin gage plastic film
LEWIS-11276 B71-10135 08
Sensitive gaseous hydrogen detection system
M-FS-21161 B71-10209 04
Solar cell power scanner
LEWIS-11280 B71-10223 02
Plating by glass-bead peening
GSFC-11163 B71-10256 08
- Nonvolatile read/write memory element - A concept
GSFC-10993 B71-10346 01
A study of nitride devices for computer memory applications
M-FS-20971 B71-10350 03
Use of cermet thin film resistors with nitride passivated metal insulator field effect transistor
GSFC-10835 B71-10375 08
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08
Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03
Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03
Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04
Aluminum nitride insulating films for MOSFET devices
NPO-11859 B72-10425 04
Efficient wire-grid duplexer-polarized for CO₂ lasers
GSFC-11403 B72-10440 03
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
Unsupported thin film beam splitter
GSFC-10525 B72-10471 02
Universal dc signal conditioner
MSC-17526 B72-10510 02
Thermocouple tape
LEWIS-11072 B72-10515 04
The thin film microwave iris
LANGLEY-10511 B72-10548 02
PTFE films with improved flexibility
NPO-12028 B72-10551 04
Reverse-osmosis membranes by plasma polymerization
ARC-10696 B72-10710 04
Thin film thermoelectric devices as thermal control coatings: A study
M-FS-21384 B73-10153 04
A new method for the determination of thin film porosity
HQ-10673 B73-10286 01
Instrument for measuring thin-film belt lengths
NPO-13149 B73-10455 06
Method of measuring the thickness of radioactive thin films
LEWIS-11971 B74-10065 03
Thin-film temperature sensor
NPO-11775 B74-10100 01
A superior process for forming titanium hydrogen isotopic films
LEWIS-12083 B75-10001 03
Thin KAPTON polyimide films vacuum formed at high temperature retain their shape at temperatures to 450 K
LEWIS-12412 B75-10016 04
High-performance Schottky diodes endure high temperatures
M-FS-23184 B75-10101 01

- Laser-to-electricity energy converter for short wavelengths
NPO-13390 875-10119 03
- Microelectronic fabrication of superconducting devices and circuits
NPO-13419 875-10120 01
- Improved multiple-target sputtering equipment
NPO-13345 875-10178 04
- Measurement of trap density in dielectric film
NPO-13443 875-10204 02
- Improved chemical vapor-deposition reactor
NPO-13650 875-10212 08
- Ellipsometer measurements of epitaxial GaAs layers: A concept
M-FS-23238 875-10230 01
- Read-only optical storage medium
M-FS-23169 875-10305 03
- THIN LAYER CHROMATOGRAPHY**
Combining micro dry column chromatography and mass spectrometry
NPO-11240 870-10231 03
- TLC determination of functionality in prepolymers
NPO-11731 873-10037 04
- 'Dry-column' chromatography of plant pigments
ARC-10780 873-10271 04
- THIN PLATES**
Vibration testing and analysis using holography
M-FS-21050 871-10352 03
- Explosive bonded T2M-wire-reinforced C129Y columbium composites
M-FS-20925 871-10356 04
- A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 871-10439 02
- THIN WALLED SHELLS**
Stability of structural rings under uniformly distributed radial loads
NPO-11396 870-10236 06
- Analytical prediction of reverse buckling pressure for thin shells
KSC-10515 870-10582 06
- Analysis of nonlinear vibrations of cylinders
NPO-11736 873-10302 09
- Metal tube used as solar engine
ARC-10461 873-10493 03
- Computer program for structural analysis of layered orthotropic ring-stiffened shells of revolution (SALORS): Linear stress analysis option
LANGLEY-11569 874-10186 09
- Computer program for numerical analysis of stiffened shells of revolution
M-FS-23027 875-10094 09
- THIN WALLS**
A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 870-10575 03
- Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
M-FS-20556 870-10598 06
- Thermocouple installation in thin-walled tubes
LEWIS-11222 870-10655 01
- Cast segment evaluation
M-FS-21354 871-10363 08
- THIOLS**
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 871-10331 04
- THIXOTROPY**
A new vibration dampening adhesive
MSC-17668 872-10284 04
- THORIUM ALLOYS**
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 870-10185 04
- Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 870-10210 04
- THORIUM OXIDES**
Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 870-10104 04
- Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 870-10183 04
- Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 870-10185 04
- Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 870-10580 08
- Fabrication techniques for thorium-dispersed /TD/ nickel
LEWIS-11240 871-10369 08
- Dispersion-strengthened chromium alloy
LEWIS-10982 872-10378 04
- Oxidation resistant, thorium-dispersed nickel-chromium-aluminum alloy
LEWIS-11541 873-10077 04
- THREADS**
Connector locking device
KSC-10537 870-10553 01
- Compact fluid-flow restrictor
MSC-15803 870-10679 07
- Strong, easy-to-mold, spiral buttress thread
LANGLEY-10755 871-10336 08
- Instrument accurately measures stress loads in threaded bolts
M-FS-21121 871-10486 01
- Joint preload properties of structural threaded fasteners
M-FS-21453 871-10531 08
- Adjustable locking device
M-FS-21650 872-10459 07
- THREE BODY PROBLEM**
Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 870-10442 03
- Overlapped conic simulation of three-body trajectories
MSC-13460 870-10536 03
- THREE DIMENSIONAL COMPOSITES**
A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 871-10061 04
- THREE DIMENSIONAL FLOW**
Laser-Doppler gas velocimeter
M-FS-20583 870-10143 02
- An investigation of tandem-row, high-head pump inducers
M-FS-21139 871-10152 07
- Wind tunnel investigations at transonic Mach numbers
M-FS-20895 871-10254 06
- Three-dimensional gas turbulence measurement with a laser-Doppler velocimeter system
M-FS-22713 873-10371 04
- THREE DIMENSIONAL MOTION**
Three-dimensional pantograph for use in hazardous environments
NUC-10222 870-10567 07
- Motion compensator for holographic motion picture camera
M-FS-22517 873-10434 03
- Photography of random motion with a holographic camera
M-FS-22537 873-10435 03
- THRESHOLD CURRENTS**
Multiport semiconductor devices
ERC-10293 870-10448 01
- THRESHOLD DETECTORS (DOSIMETERS)**
Laser altimeter
M-FS-13691 870-10196 02
- Combustion products generating and metering device
GSFC-11095 874-10036 04
- THRESHOLD GATES**
Pulse width-pulse rate modulator
ARC-10025 871-10497 01
- Irradiation of MOS-FET devices to provide desired logic functions
GSFC-11061 872-10719 01
- Low phase-noise digital frequency divider
NPO-11569 873-10135 01
- High voltage solid-state relay
LEWIS-12096 874-10006 01
- Low-distortion receiver for bilevel, baseband PCM waveforms
MSC-14557 874-10025 02
- Radiation hardening of metal-oxide semi-conductor (MOS) devices by boron
GSFC-11425 874-10026 01
- THRESHOLDS (PERCEPTION)**
New filter technique improves home television reception
MSC-13729 871-10141 02
- THROATS**
High amplitude sinusoidal pressure generator
LEWIS-11241 870-10635 07
- Portable lightweight bandsaw
M-FS-16927 871-10237 07
- Continuous-flow variable-density wind tunnel facilities
NPO-11287 872-10078 06
- Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 872-10206 03
- THROTTLING**
Four-way, full-throttling valve concept
MSC-13437 870-10165 07
- Digital computer program for analyzing chugging instabilities
LEWIS-11294 871-10215 09
- Liquid-fuel valve with precise throttling control
NPO-10808 871-10449 07
- Shutoff and throttling valve
NPO-11951 874-10105 07
- Throttleable heat pipe
ARC-10848 874-10173 03
- THRUST**
Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 871-10020 07
- An investigation of tandem-row, high-head pump inducers
M-FS-21139 871-10152 07
- Fabrication of cooled, graphite-lined structures
LEWIS-11741 872-10593 08

THRUST AUGMENTATION

Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06

THRUST BEARINGS

Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds

LEWIS-11152 B71-10173 07

Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings

LEWIS-11511 B71-10509 09

High speed, self-acting, face-contact shaft seal has low leakage and very low wear

LEWIS-11598 B72-10114 07

Turbopump radial and axial rotor support system

M-FS-21495 B72-10264 07

Long life, high speed, thrust-load ball bearings

LEWIS-12269 B75-10022 06

THRUST CHAMBERS

Fabrication of large tungsten structures by chemical vapor deposition

LEWIS-11239 B71-10212 08

Cast segment evaluation

M-FS-21354 B71-10363 08

Fabrication techniques for

thoria-dispersed /TD/ nickel

LEWIS-11240 B71-10369 08

Improved electron emitter

LEWIS-10814 B71-10388 03

Fabrication of cooled, graphite-lined structures

LEWIS-11741 B72-10593 08

Design criteria monograph for liquid propellant gas generators

LEWIS-12139 B74-10008 07

Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding

LEWIS-11490 B74-10124 04

Fabrication of thick structures by sputtering

LEWIS-12331 B74-10126 08

Regenerative cooling design and analysis computer program

LEWIS-12110 B75-10015 09

THRUST CONTROL

Proportional pulsed pilot valve

ARC-10228 B71-10468 07

Adaptive position control loop

ARC-10255 B72-10052 02

Combination throttle and shutoff valve

M-FS-21513 B72-10287 07

Integrated monopropellant thruster

NPO-12004 B72-10502 06

Improved aircraft reaction nozzles

ARC-10906 B75-10284 06

THRUST LOADS

Flexible pivot mount eliminates friction and hysteresis

M-FS-20725 B70-10577 07

THRUST MEASUREMENT

Wind tunnel buffet load measuring technique

ARC-10495 B72-10022 06

THRUST VECTOR CONTROL

Experimental investigation and analysis of two sources of nozzle-thrust misalignment

NPO-11355 B70-10406 06

Wide angle solar sensor

NPO-11341 B72-10080 01

Thrust vector control for V/STOL aircraft

ARC-10788 B74-10049 06

Vented vectoring-nozzle for STOL and

V/STOL aircraft

ARC-10839 B74-10058 06

THUNDERSTORMS

Measuring the electric field of a cloud

KSC-10731 B73-10074 02

Rocket borne instrument to measure electric fields inside electrified clouds

KSC-10730 B73-10176 03

THYRATRONS

High-temperature, long-life thyatron

LEWIS-11327 B72-10134 01

A high-speed spectrograph shutter

HQ-10635 B73-10368 01

THYRISTORS

A hybrid electromechanical solid state switch for ac power control

MSC-14005 B72-10018 02

TIE BOLTS

Easy insert, easy release toggle bolt fastener

ARC-10140 B70-10509 07

TIGHTNESS

Automatic, computerized testing of bolts

NPO-11090 B70-10657 06

TILES

Improved mold release for filled-silicone compounds

JSC-19300 B73-10338 04

Strain arrestor plate for mounting rigid insulating tiles

JSC-14182 B73-10465 06

Method of attaching insulation tiles

MSC-12619 B75-10104 04

Repair of damaged insulation tiles

MSC-19549 B75-10321 04

Fast semiautomatic dimensional test set and data logger

MSC-19554 B75-10322 07

TILTING ROTORS

Swashplate feedback control for tilt-rotor aircraft

ARC-10854 B74-10174 06

TIME

Digital-voltage curve generator

NPO-11104 B70-10590 02

TIME CONSTANT

A 20 kHz power oscillator

LEWIS-11319 B71-10174 01

Multiloop distributed RC active networks

ARC-10200 B71-10177 01

Closed-loop control of stochastic nonlinear systems

MSC-13858 B71-10306 09

Externally programmed variable timer

M-FS-20776 B71-10437 04

Manganese bismuth thin film for large capacity digital memories

M-FS-21246 B72-10107 03

TIME DEPENDENCE

Artificial-feedback system

GSFC-10324 B70-10421 02

TIME DIVISION MULTIPLEXING

Double phase-lock loop with rapid transient response - A concept

GSFC-10864 B71-10349 01

Tetrad bubble domain chip arrangement for multiplexing

M-FS-22296 B73-10202 02

Multiplexing technique for computer communications via satellite channels

ARC-10879 B75-10133 09

TIME FUNCTIONS

Circuit modification aids in atomic particle discrimination

LEWIS-11155 B70-10689 01

Hyperbola-generator for location of aperiodic events

LANGLEY-10312 B70-10695 06

Time Data Sequential Processor

/TDSP/

NPO-11327 B70-10720 09

New procedure for determining minimum

time orbit transfers

M-FS-14804 B71-10376 09

TIME LAG

Remotely actuated release mechanism

NPO-10698 B70-10286 01

Reducing streak film data via electronic cross correlator

M-FS-18804 B70-10365 01

Errors in hybrid computers

M-FS-21289 B72-10141 02

Real-time pair-feeding of animals

ARC-10302 B72-10298 05

A manually set magnetic wire counter

AEC-10039 B72-10369 01

Current switch has built-in time delay:

A concept

MSC-17324 B72-10453 01

Amplifier for signal from thin film transducer

LEWIS-11494 B72-10463 01

Double-discharge copper-vapor laser

NPO-13348 B75-10123 03

New design of hingeless helicopter rotor improves stability

ARC-10807 B75-10132 06

TIME MEASUREMENT

Digital demodulation with data subcarrier tracking

NPO-10858 B70-10518 02

Technique for analyzing human

respiratory process

MSC-13436 B70-10528 05

Digital input is buffered to real-time

analog display

KSC-10397 B70-10562 01

High-accuracy detector for laser radar

MSC-13275 B70-10570 01

Bidirectional flow meter

M-FS-18737 B70-10589 07

Double precision trajectory program /DPTRAJ 2.2C/

NPO-11798 B71-10390 09

Digital aspect clock

ARC-10088 B71-10440 02

An improved learning decoder

MSC-14070 B72-10573 02

Quasars as very-accurate clock synchronizers

NPO-13276 B75-10114 02

TIME RESPONSE

JPL transient radiation analysis by computer program (JTRAC)

NPO-13470 B75-10053 09

TIME SERIES ANALYSIS

A real-time statistical time-series analyzer

MSC-12428 B71-10276 02

Spectral analysis of multiple time series

M-FS-18859 B72-10614 09

TIME SHARING

Visual display panel functions as computer input/output device

ERC-10223 B70-10476 01

Constant current load matches impedances of electronic components

GSFC-10982 B70-10643 01

TIME SIGNALS

Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02

Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05

Time-synchronized VLF phase-tracking receiver
NPO-11600 B73-10275 02

Data processor with conditionally supplied clock signals
GSFC-10975 B74-10021 02

TIMING DEVICES

Electro-optical time marker for high-speed cameras
KSC-10294 B70-10229 01

Volumetric leak detector
MSC-11325 B70-10302 07

Microbalance accurately measures extremely small masses
HQ-09962 B70-10607 01

Automatic amino acid analyzer
ARC-10215 B71-10165 04

Improved reversible coulometer cell
SAN-10051 B71-10176 02

Externally programmed variable timer
M-FS-20776 B71-10437 04

High noise immunity one shot
ARC-10137 B72-10047 01

Time-adjusted variable resistor
NPO-11306 B72-10116 01

A rapid, precise, reciprocating-movement color filter system
GSFC-11255 B72-10497 07

An inexpensive vehicle speed detector
M-FS-22601 B73-10157 02

Inexpensive programmable computer clock
LEWIS-11797 B73-10308 02

Time-control system for communication between data-collection and orbiting
GSFC-11182 B74-10088 02

Delay-lock-loop code-correlation synchronizer
GSFC-11868 B75-10291 02

TIN

Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01

Diffusion technique for lithium-doped silicon
GSFC-10827 B70-10148 01

Solid state bistable power switch
ERC-10290 B70-10383 01

Low-temperature bonding of temperature-resistant electronic connections
M-FS-20909 B71-10253 08

Environmental effects on silicon solar cells
NPO-11475 B71-10282 02

Soldering iron temperature indicator
NPO-11545 B72-10098 02

New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04

TIN ALLOYS

Oxidation-resistant coatings for refractory metals used in inert atmospheres
NPO-11477 B70-10674 04

A spiraled niobium tin superconductive ribbon
LEWIS-11726 B73-10044 04

TIN COMPOUNDS

Alternating current losses in superconducting coils
M-FS-21129 B72-10360 03

TIN OXIDES

Thin film devices used as oxygen partial pressure sensors
XLA-06473 B70-10419 04

Man-machine communication - A transparent switchboard for computers
MSC-13746 B71-10263 02

TIRES

Tandem wheel drop-legs for standard truck trailer
M-FS-13466 B70-10088 07

TISSUES (BIOLOGY)

New method speeds body inert gas saturation and utilizes surface decompression
MSC-13543 B71-10330 05

Miniature battery-operated electromagnetic system for blood flow measurements
ARC-10362 B71-10477 05

Tissue holder for experimental and Demonstration Surgery
LEWIS-11755 B72-10630 05

Automatically-focusing microscope system for live tissue observation
NPO-13215 B75-10048 03

TITANIUM

Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07

High-field superconducting nested coil magnet
ARG-10060 B70-10061 03

Ultra-high molecular sink vacuum chamber
NPO-10799 B70-10130 03

Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04

Tungsten fiber-reinforced nickel superalloy with greatly increased strength at 2000 degrees F
LEWIS-10933 B70-10183 04

Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04

Copper-titanium eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10256 B70-10444 04

Metal drilling with portable hand drills
M-FS-15180 B70-10594 08

Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03

Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08

Strain gage installation manual
M-FS-18822 B70-10715 06

Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01

Environmental effects on silicon solar cells
NPO-11475 B71-10282 02

Improved brazing technique for pyrolytic graphite
NPO-12026 B71-10293 08

Hydraulic expansion process shapes large metal sheets
MSC-12432 B71-10511 07

Copper/nickel eutectic brazing of titanium
ARC-10337 B71-10525 08

Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08

Carbon dioxide concentrator
ARC-10245 B72-10194 05

New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04

Titanium reinforced boron polyimide composite
M-FS-21916 B72-10353 04

Long life neutron generator target using deuterium pass-through structure
LEWIS-11866 B74-10063 03

Method of measuring the thickness of radioactive thin films
LEWIS-11971 B74-10065 03

A high yield neutron target
LEWIS-12058 B74-10066 03

TITANIUM ALLOYS

Directionally solidified superalloy
HQ-10522 B70-10058 04

Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03

Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04

Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04

High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04

Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
M-FS-18753 B70-10364 04

Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn B70-10366 04

Metal drilling with portable hand drills
M-FS-15180 B70-10594 08

Method of joining metals of significantly different expansion rates
NPO-12076 B71-10028 08

A concept for improving the dimensional stability of filamentary composites in one direction
LANGLEY-10443 B71-10061 04

Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04

Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04

Electroplating on titanium alloy
M-FS-12151 B71-10338 08

Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09

Joint preload properties of structural threaded fasteners
M-FS-21453 B71-10531 08

Experimental study of surface cracks
MSC-14032 B72-10019 04

Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04

Titanium alloy stress corrosion cracking in presence of dinitrogen tetroxide
M-FS-21113 B72-10321 04

- Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
 LANGLEY-10930 B72-10339 04
 Improved diffusion welding and roll welding of titanium alloys
 LEWIS-11852 B73-10005 08
 Braze alloys for high temperature service
 LEWIS-11374 B73-10205 06
 Materials data handbook on titanium 6Al-4V
 M-FS-22796 B73-10372 04
- TITANIUM CARBIDES**
 Floating zone process for drawing small diameter fibers of refractory materials
 LEWIS-11380 B72-10491 04
- TITANIUM COMPOUNDS**
 Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 B70-10021 01
 Effects of hydrogen on ELI titanium alloy Ti-5Al-2.5Sn
 M-FS-18815 B70-10366 04
 Development of superconductive magnets
 LEWIS-11170 B70-10678 03
 Aluminum foil interconnects for solar cell panels
 ARC-10374 B72-10058 08
 Semi-organic structural adhesive for aluminum
 M-FS-21328 B73-10071 04
 A superior process for forming titanium hydrogen isotopic films
 LEWIS-12083 B75-10001 03
- TITANIUM NITRIDES**
 Determination of nitrogen in titanium nitride
 LEWIS-11046 B70-10588 04
- TITANIUM OXIDES**
 Improved fire-resistant coatings
 GSFC-10072 B71-10198 04
- TITRATION**
 Rapid analytical determination of glutaraldehyde concentrations
 ARG-10413 B71-10047 05
- TOLERANCES (MECHANICS)**
 Measuring the conductor spacing in flat conductor cables
 M-FS-20560 B70-10015 08
 Test fixture insures high degree of accuracy in flexure tests
 NUC-10246 B70-10358 07
 Vee-notch tool cuts specimens
 M-FS-20730 B70-10411 06
 Redundant electronic circuit provides fail-safe control
 NUC-10389 B70-10565 01
 Digital telemetry system eliminates data redundancy
 MSC-12388 B71-10082 02
 Fluid slip ring transfers coolant to rotating equipment
 MSC-13451 B71-10083 07
 Low-cost quasi-parabolic antenna
 LEWIS-11291 B71-10121 01
 Induction brazing manual
 M-FS-14924 B71-10123 08
 Preparation of homogeneous vitreous materials for electronic and optical devices
 HQ-10670 B71-10172 04
 Promising born/graphite/resin composites
 M-FS-21126 B71-10217 04
- Efficient digital comparison technique for logic circuits
 M-FS-21080 B71-10218 02
 Calibration-interval adjustment indicator - A concept
 M-FS-18693 B71-10309 01
 Tolerance analysis program
 MSC-17487 B71-10389 09
 Screening method improves performance of nickel-cadmium batteries
 GSFC-11260 B71-10411 04
 Cartesian-coordinate dimensioning for plumbing systems
 M-FS-18867 B71-10435 08
 A new low-cost method for producing collimating mirrors
 LEWIS-11553 B72-10513 08
 Machine finishes balls to high degree of roundness
 M-FS-21448 B72-10595 08
 Comparative performance of double-focus and quadrupole mass spectrometers
 NPO-11689 B72-10702 03
 Fast semiautomatic dimensional test set and data logger
 MSC-19554 B75-10322 07
- TOLUENE**
 Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04
 Synthesis of a new class of highly fluorinated aliphatic diisocyanates
 M-FS-20883 B71-10300 04
 High strength, medium density molded foam
 AEC-10053 B72-10235 04
- TOOLING**
 High-temperature oxidation and erosion-resistant refractory coatings
 LEWIS-11221 B70-10634 04
 Low-cost quasi-parabolic antenna
 LEWIS-11291 B71-10121 01
 Measurement of dimensions and alignment with optical instruments
 M-FS-22168 B73-10061 06
- TOOLS**
 Integrated circuit flat-pack lead bender
 MSC-13489 B70-10117 01
 Universal router concept
 M-FS-20756 B70-10313 07
 Electromechanical hand incorporates touch sensors and trigger function
 M-FS-20812 B70-10348 07
 Laser scribing of silicon wafers
 ERC-10386 B70-10437 01
 Volume-checking tool
 KSC-10514 B70-10502 07
 Gage for measuring coastal erosion and sedimentation
 LANGLEY-10779 B70-10629 01
 Inexpensive, removable coating for plaster tooling
 MSC-15819 B70-10666 04
 Carriage-rail assembly for high-resolution mechanical positioning
 M-FS-20908 B70-10714 07
 Induction brazing manual
 M-FS-14924 B71-10123 08
 A lightweight, high output soil sampler
 NPO-10797 B71-10159 07
 Weld beveling of large-diameter pipes
 KSC-10550 B71-10280 08
 New materials for fireplace logs
 M-FS-21363 B71-10339 04
 Microbial burden prediction model program
 NPO-11709 B71-10401 09
- Folding tools for flat conductor cable harnesses
 M-FS-20121 B71-10415 08
 Seating tool for preparing molded-plug terminations on FCC
 M-FS-20123 B71-10417 08
 Durability tester for FCC connectors
 M-FS-20128 B71-10418 08
 Sprue cutoff tool for molded FCC plugs
 M-FS-20236 B71-10421 08
 Folding tool for preparing FCC molded-plug terminations
 M-FS-20116 B71-10422 08
 Multiedge slitter for FCC
 M-FS-20112 B71-10457 08
 Rotary stripper for shielded and unshielded FCC
 M-FS-20119 B71-10465 08
 Tool expedites installation of BNC connectors
 ARC-10327 B71-10480 07
 Instrument accurately measures stress loads in threaded bolts
 M-FS-21121 B71-10486 01
 Optical inspection tool for interior surfaces of fluid lines
 M-FS-15162 B71-10513 06
 Tool carrier
 M-FS-21469 B72-10319 07
 Adjustable locking device
 M-FS-21650 B72-10459 07
 Vise to hold bones or other irregular objects
 ARC-10679 B72-10569 07
 Study of hot hardness characteristics of tool steels
 LEWIS-11785 B72-10583 04
 A concept for universal pliers
 KSC-10768 B72-10685 07
 Diffusion welding tool
 LEWIS-11807 B73-10072 08
 Beam lead forming tool
 M-FS-22133 B73-10098 07
 A proposed hand-tool assembly for robots
 M-FS-22266 B73-10216 07
 Tool for installing or extracting small bulbs in limited-access spaces
 LANGLEY-11543 B73-10433 07
 Bolt installation tool for tightening large nuts and bolts
 NPO-13059 B74-10164 07
 Automatic soldering machine
 MSC-19401 B74-10193 06
 Mechanical rod peening
 M-FS-23047 B74-10237 07
 Straight-line IC removal tool
 NPO-13157 B74-10281 01
- TOPOGRAPHY**
 Microflora in soils of desert regions
 NPO-11215 B70-10253 05
 Computerized methods for trafficability analysis
 M-FS-21423 B71-10484 03
 Analog table look-up device identifies unknown terrain
 MSC-13816 B72-10033 03
- TOPOLOGY**
 Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
 NPO-11069 B70-10067 09
 PERT "C"
 M-FS-20164 B70-10184 09
 PUZZLE - A program for computer-aided design of printed circuit artwork
 LRL-10050 B71-10122 09

- A topological approach to computer-aided sensitivity analysis
 ARC-10214 B71-10164 02
 Graphical method for analyzing digital computer efficiency
 ARC-10210 B71-10453 09
 Topological solution of bilateral switching networks
 ARC-10294 B72-10055 01
 Generalized current distribution rule
 LANGLEY-11565 B74-10093 02
- TORCHES**
 Spinarc gas tungsten arc torch holder
 MSC-15646 B70-10041 08
 Inexpensive high-temperature furnace for thermocouple calibration
 NUC-10372 B71-10046 03
- TORNADOES**
 Tornado detector and alarm
 M-FS-20915 B72-10106 01
- TOROIDAL SHELLS**
 Toroidal equipment packaging
 ARC-10828 B74-10055 03
 Propellant acquisition device for use with a spinning toroidal tank
 ARC-10840 B74-10059 06
- TOROIDS**
 Computerized toroidal transformer design
 NPO-11115 B70-10606 09
 Toroidal mirrors provide virtual walls for breaks in light pipes
 ARC-10031 B70-10632 03
 Improved circuit avoids premature power transistor failure
 NPO-11365 B71-10370 02
 Two-stage magnetometer measures weak magnetic fields
 AEC-10068 B72-10370 01
 Computer program for the design of toroidal transformers
 LEWIS-11878 B73-10214 09
 Flat-band assembly for toroidal transformer cores
 NPO-11966 B73-10391 08
 Design parameters for toroidal and bobbin magnetics
 NPO-13441 B73-10459 01
- TORQUE**
 Slow-speed drives for miniature devices
 NPO-10700 B70-10007 02
 Mechanical characteristics of the Bossler coupling
 HQ-10508 B70-10072 07
 Computer program for analysis of flow across a gas turbine seal
 LEWIS-10975 B70-10317 09
 Hydrodynamic squeeze-film bearings for gyroscopes
 M-FS-20802 B70-10389 07
 Small hydraulic turbine drives
 LEWIS-11064 B70-10416 07
 Special wrench for B-nuts reduces torque stress in tubing
 MSC-15885 B70-10550 07
 Flexible pivot mount eliminates friction and hysteresis
 M-FS-20725 B70-10577 07
 Automatic, computerized testing of bolts
 NPO-11090 B70-10657 06
 Brushless direct-current motor with stationary armature and field
 XGS-05290 B70-10691 02
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
- Fluid slip ring transfers coolant to rotating equipment
 MSC-13451 B71-10083 07
 Performance evaluation system for inertial navigation equipment
 MSC-13542 B71-10087 02
 A lightweight, high output soil sampler
 NPO-10797 B71-10159 07
 Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
 LEWIS-11152 B71-10173 07
 Thermal heliotrope - A passive sun-tracker
 GSFC-10945 B71-10260 03
 Cadmium plated steel caps seal anodized aluminum fittings
 M-FS-20137 B71-10355 05
 Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
 LEWIS-11511 B71-10509 09
 Brushless DC motor with dual windings
 M-FS-21290 B71-10530 02
 Joint preload properties of structural threaded fasteners
 M-FS-21453 B71-10531 08
 Adaptive position control loop
 ARC-10255 B72-10052 02
 Noncontact torque measurement using stroboscopic techniques
 MSC-12282 B72-10332 07
 A brushless dc spin motor for momentum exchange altitude control
 M-FS-14952 B72-10448 02
 High torque bellows seal rotary drive
 LEWIS-11813 B72-10681 07
 Variable-frequency inverter controls torque, speed, and braking in ac induction motors
 M-FS-22088 B73-10525 02
 Torque control system
 GSFC-11077 B75-10085 06
- TORQUE MOTORS**
 Electronically controlled motor drive system has ultra-high reliability and long lifetime
 GSFC-10065 B70-10346 02
 Multimode ergometer system
 M-FS-21044 B71-10107 05
 Spin vector control of a spinning space station
 M-FS-21333 B71-10296 09
 Vortex servovalve for fluidic or electrical input
 ARC-10155 B72-10173 07
 Two-stage coaxial gas compressor
 ARC-10426 B72-10210 06
- TORQUEMETERS**
 Comparison of release torques of tightened bolts in vacuum and air
 M-FS-20773 B70-10395 06
 Special wrench for B-nuts reduces torque stress in tubing
 MSC-15885 B70-10550 07
 Instrument accurately measures stress loads in threaded bolts
 M-FS-21121 B71-10486 01
 Noncontact torque measurement using stroboscopic techniques
 MSC-12282 B72-10332 07
- TORQUERS**
 Fill-in binary loop pulse-torque quantizer
 M-FS-23100 B75-10037 02
- TORSION**
 Structural behavior of tapered inflated fabric cylinders under various loading conditions
 MSC-15317 B71-10327 06
 Noncontact torque measurement using stroboscopic techniques
 MSC-12282 B72-10332 07
 Automated data acquisition and reduction system for torsional braid analyzer
 LANGLEY-11578 B75-10073 02
- TORSIONAL STRESS**
 Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
 M-FS-20556 B70-10598 06
 Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01
 Bolt installation tool for tightening large nuts and bolts
 NPO-13059 B74-10164 07
- TORSIONAL VIBRATION**
 Rotordynamic response analysis program
 HQ-10579 B71-10211 09
 Monitor for physical property changes in solid propellants
 ARC-10702 B73-10130 03
- TORUSES**
 Long life, low cost ball valve, with lifted seals and cartridge type construction
 MSC-13430 B70-10653 07
- TOUCH**
 An improved aesthesiometer
 MSC-13609 B72-10032 05
 Convuluted fabric for full-pressure gloves
 ARC-10529 B72-10215 04
 Improved measurement of depth perception
 M-FS-14133 B72-10730 05
- TOUGHNESS**
 Soluble high molecular weight polyimide resins
 LEWIS-11056 B70-10504 04
 Diamine curing agents for polyurethanes
 LANGLEY-11829 B75-10261 08
 Influence of heat treatment on mechanical properties of 300M steel
 MSC-14792 B75-10271 04
- TOWED BODIES**
 Simple and effective method to lock buoy position to ocean currents
 M-FS-23140 B75-10095 06
- TOWERS**
 Accumulative weights program
 M-FS-15066 B71-10181 09
- TOXIC HAZARDS**
 Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03
 Cavitating Venturi sump
 ARC-10504 B72-10012 06
- TOXICITY**
 Low temperature ablation models made by pressure/vacuum application
 LANGLEY-10676 B70-10578 04
 Human performance measuring device
 LANGLEY-10679 B70-10619 05
 A silver ion water sterilization system
 MSC-15734 B71-10278 04

TOXICITY AND SAFETY HAZARD

Inhibited 1,1,1-trichloroethane replaces trichloroethylene for degreasing

M-FS-18844 870-10645 04

Estimating carbon monoxide exposure

MSC-17211 871-10319 04

Mercury in the environment

AEC-10048 872-10233 05

Handbook for estimating toxic fuel hazards

M-FS-21114 875-10198 04

TRACE CONTAMINANTS

New method for photoresist stripping

ERC-10239 870-10497 04

Trace contaminant adsorption and sorbent regeneration in closed ecological systems

LANGLEY-10681 872-10328 04

TRACE ELEMENTS

Neutron-activation analysis applied to copper ores and artifacts

ARG-10446 870-10177 04

Dynamic delta method for trace gas analysis

LANGLEY-11800 875-10159 04

TRACERS

Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method

M-FS-21160 871-10208 04

TRACKING (POSITION)

Telemetry receiver

NPO-10746 870-10008 02

Antenna-array, phase quadrature tracking system

MSC-12205 870-10095 02

Very high frequency digital rangine system

MSC-15763 870-10284 02

Pulse-rate averaging circuit

GSFC-10718 870-10370 01

Ferrite attenuator modulation improves antenna performance

NPO-12011 870-10702 01

Radial rotating antenna-feed system

GSFC-11013 871-10025 01

New filter technique improves home television reception

MSC-13729 871-10141 02

Thermal heliotrope - A passive sun-tracker

GSFC-10945 871-10260 03

Planet geometric center tracker

ARC-10084 871-10445 02

Miniature sonar fish tag

LANGLEY-11814 875-10092 02

Automatic solar tracker

NPO-13630 875-10237 03

TRACKING FILTERS

Digital demodulation with data subcarrier tracking

NPO-10858 870-10518 02

TRACKING NETWORKS

Electronic scanning of 2-channel monopulse patterns

GSFC-10299 870-10485 02

Data-aided carrier tracking loops

NPO-11282 873-10356 01

TRACKING RADAR

Ranging code processor

NPO-10066 870-10060 02

Economical phased-array antenna for environmental applications

HQ-10434 871-10057 02

High-efficiency K-band tracking antenna feed

MSC-14717 875-10107 02

TRACKING STATIONS

Time Data Sequential Processor

/TDSP/

NPO-11327 870-10720 09

Deep space network

NPO-11562 872-10043 01

TRAFFIC CONTROL

Two-axis flux gate magnetometer

GSFC-10441 870-10345 01

Reliability Analysis Model

M-FS-14513 870-10614 09

Computerized methods for trafficability analysis

M-FS-21423 871-10484 03

Automatic speed control of highway traffic

M-FS-21791 873-10100 02

An inexpensive vehicle speed detector

M-FS-22601 873-10157 02

TRAGACANTH

Protective coating for salt-bath brazing

LEWIS-90255 871-10381 08

TRAILERS

Tandem wheel drop-legs for standard truck trailer

M-FS-13466 870-10088 07

TRAILING EDGES

Digital parallel-to-series pulse-train converter

MSC-12417 871-10450 01

TRAINING DEVICES

FORTAN programming - A self-taught course

LANGLEY-10738 871-10052 09

TRAJECTORIES

Multiple focusing magnets used for velocity selection of atoms

GSFC-10128 870-10581 03

Closed-loop control of stochastic nonlinear systems

MSC-13858 871-10306 09

New procedure for determining minimum time orbit transfers

M-FS-14804 871-10376 09

TRAJECTORY ANALYSIS

Theory and application of Kalman filtering

M-FS-20491 870-10309 06

Fast Mars communication geometry program

LANGLEY-10658 871-10002 09

Quick response targeting program

M-FS-15157 871-10147 09

Double precision trajectory program

/DPTRAJ 2.2C/

NPO-11798 871-10390 09

Elements of orbit-determination theory

- Textbook

NPO-11466 871-10425 03

N-body U and K matrix program

LEWIS-11438 873-10012 09

Marshall vehicle-engineering simulation system (MARVES)

M-FS-21701 875-10199 06

TRAJECTORY CONTROL

Multibody Interplanetary Swingby Trajectories /MIST-1/

M-FS-15081 870-10603 09

Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts

M-FS-20860 871-10072 07

TRAJECTORY MEASUREMENT

Micrometeoroid composition analyzer

GSFC-11892 874-10287 01

TRAJECTORY OPTIMIZATION

Overlapped conic simulation of three-body trajectories

MSC-13460 870-10536 03

Rapid analysis of electric propulsion missions

ARC-10430 872-10299 09

Interplanetary Trajectories, Encke Method (ITEM)

GSFC-11576 872-10604 09

TRANSDUCERS

Immersed ultrasonic inspection of high acoustical attenuative structures

MSC-15702 870-10055 03

Improved calibration of accelerometers at temperatures down to -450 degrees F

M-FS-18561 870-10173 03

Inorganic bonding of semiconductor strain gages

GSFC-10833 870-10215 08

Precision control system for engine fuel

NPO-12017 870-10244 07

Motor brush wear measured with strain gages

GSFC-10886 870-10266 01

Hall effect transducer gives electrical output proportional to meter shaft rotation

LANGLEY-10620 870-10298 01

Strain gage load measuring device - A concept

MSC-13385 870-10326 01

A self-tuning filter

ARC-10264 870-10337 01

Complementary-MOS binary counter with parallel-set inputs

ERC-10122 870-10373 01

Nondestructive sonic testing of adhesive-bonded composites

M-FS-20793 870-10397 08

Control system for an artificial heart

LEWIS-11057 870-10469 05

Intruder detection system

ARC-10097 870-10638 02

Automatic, computerized testing of bolts

NPO-11090 870-10657 06

Strain gage installation manual

M-FS-18822 870-10715 06

Study aids accuracy of turbopump axial thrust analysis

M-FS-18774 871-10020 07

Ultrasonics used for high-precision nondestructive inspection of brazed joints

NUC-10352 871-10045 08

Polarographic carbon dioxide transducer amplifier

MSC-13728 871-10090 02

Ultrasonic metal etching for metallographic analysis

LEWIS-11230 871-10099 04

Subminiature transducer measures unsteady pressures

ARC-10349 871-10114 01

System accurately controls pressure in cryogenic tanks

LEWIS-11329 871-10118 03

Portable low-frequency vibration measuring and recording system

LANGLEY-10543 871-10126 02

Inertia diaphragm pressure transducer

XAC-2981 871-10200 05

Strain gage performance above 1033 K

M-FS-18831 871-10225 04

Ultrasonic scanning system for in-place inspection of brazed-tube joints

M-FS-21166 871-10227 06

Multichannel intercom with simultaneous send/receive capability
 M-FS-18808 B71-10228 02

Catheter transducer and circuit
 ARC-10132 B71-10234 01

On-line analysis of random vibrations
 ARC-10154 B71-10284 09

Precision, triple-parameter, nondestructive-test system for in-process microwelding
 ARC-10402 B71-10452 01

Miniature battery-operated electromagnetic system for blood flow measurements
 ARC-10362 B71-10477 05

Wind tunnel buffet load measuring technique
 ARC-10495 B72-10022 06

Quick release acoustic sensor holding fixture
 MSC-17457 B72-10076 02

High voltage protection network
 ARC-10197 B72-10119 02

Fluidic pressure regulators
 ARC-10474 B72-10162 06

Wide-range dynamic pressure sensor
 ARC-10263 B72-10196 03

Heart catheter cable and connector
 ARC-10406 B72-10200 05

Liquid-helium-cooled Michelson interferometer
 ARC-10554 B72-10217 03

Ear oximeter-transducer monitors four physiological responses
 XAC-05422 B72-10224 05

A closed loop cryogenic environment pressure regulating system
 MSC-13880 B72-10390 02

Nonsteady flow-direction measurement
 LEWIS-11499 B72-10403 06

Acoustic emission used as weld quality monitor
 AEC-10018 B72-10427 08

Very high speed direct-readout, control and recording system
 M-FS-20658 B72-10442 02

Amplifier for signal from thin film transducer
 LEWIS-11494 B72-10463 01

Pulse-width-modulated device for precision temperature control
 NPO-11407 B72-10507 02

A compact battery powered digital thermometer
 MSC-14084 B72-10545 02

A system for automatic analysis of blood pressure data for digital computer entry
 LEWIS-11751 B72-10632 05

Diode-quad bridge for reactive transducers and FM discriminators
 ARC-10364 B72-10691 01

Signal conditioner for potentiometer type transducers
 LEWIS-11822 B73-10015 01

An economical arterial-pulse-wave transducer
 GSFC-11531 B73-10046 05

Prototype ultrasonic instrument for quantitative testing
 M-FS-22350 B73-10051 02

Limited tactile stimulus for prosthetic hands
 M-FS-16570 B73-10078 05

A self-supporting strain transducer
 LANGLEY-11263 B73-10201 06

Real time statistical analysis of acoustic emission signals for flaw monitoring systems
 M-FS-24402 B73-10212 03

Measuring micro-organism gas production
 LANGLEY-11326 B73-10241 05

Electronic high pass filter
 LEWIS-11600 B74-10083 02

Magnetometer with miniature transducer and automatic transducer scanning apparatus
 LANGLEY-11617 B74-10142 02

Miniature biaxial strain transducer
 LANGLEY-11648 B74-10180 01

Subminiature transducers for measuring forces and deformation of heart muscle
 NPO-13423 B75-10051 05

Foam-machining tool with eddy-current transducer
 M-FS-23298 B75-10309 08

TRANSFER FUNCTIONS

Active resistance capacitance filter design
 ARC-10020 B70-10034 01

New procedure for design of self-adaptive control systems
 LANGLEY-10255 B70-10115 02

Simplified method for measuring the impedance of RF power sources - A concept
 NPO-10734 B70-10212 02

Two techniques for digital filter design
 M-FS-20015 B70-10314 01

A topological approach to computer-aided sensitivity analysis
 ARC-10214 B71-10164 02

Vibrational transfer functions for base excited systems
 M-FS-21432 B71-10441 09

Optimized techniques and requirements for computer improvement of structural weld radiographs
 M-FS-21627 B71-10492 09

Computer method for identification of boiler transfer functions
 LEWIS-11808 B72-10582 09

Vibrational transfer functions for complex structures
 M-FS-20744 B72-10648 09

Three-point bridge calibration with one resistor
 ARC-10762 B74-10047 01

Continuous Fourier transform system
 ARC-10466 B74-10170 02

TRANSFER ORBITS

Optimum Multi-Impulse Rendezvous Program
 MSC-13139 B70-10623 06

New procedure for determining minimum time orbit transfers
 M-FS-14804 B71-10376 09

TRANSFERRING

Automatic microbial transfer
 LANGLEY-11354 B73-10229 05

TRANSFORMATIONS (MATHEMATICS)

Expanded sun-look angle program
 MSC-13176 B70-10602 09

Dynamic transformation method
 M-FS-22848 B74-10076 06

TRANSFORMERS

Buck-boost dc voltage regulator
 GSFC-10735 B70-10005 01

Active resistance capacitance filter design
 ARC-10020 B70-10034 01

Data acquisition from high-speed rotating shafts
 LEWIS-10886 B70-10043 01

High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01

Solid-state ac-to-dc converter
 HQ-10545 B70-10147 02

A transformer of closely spaced pulsed waveforms
 LEWIS-11045 B70-10351 01

Low-power integrated-circuit driver for ferrite-memory word lines
 ERC-10212 B70-10374 09

Transistor current and voltage limiting switch
 NPO-11166 B70-10414 01

Load cell for thermionic converter tests
 LEWIS-11068 B70-10470 01

Apparatus for simultaneous ion counting and current recording in mass spectrometry
 LEWIS-11103 B70-10471 03

A power semiconductor test circuit with reduced power requirements
 LEWIS-11175 B70-10498 01

Metal detector system
 ARC-10265 B70-10511 01

Efficient pressure-transformer for fluids
 M-FS-20830 B70-10595 07

Computerized toroidal transformer design
 NPO-11115 B70-10606 09

Small, efficient power supply for xenon lamps
 MSC-13637 B70-10684 01

Inexpensive system protects megawatt resistance-heating furnace against high-voltage surges
 NUC-10239 B71-10043 01

Saturation current spikes eliminated in saturable core transformers
 ERC-10125 B71-10142 01

A 20 kHz power oscillator
 LEWIS-11319 B71-10174 01

Small size transformer provides high power regulation with low ripple and maximum control
 M-FS-16709 B71-10193 01

Multichannel intercom with simultaneous send/receive capability
 M-FS-18808 B71-10228 02

Oscillating tank circuit eliminates ballast resistor in lamp control circuit
 M-FS-20891 B71-10275 01

Radial heat flux transformer
 NPO-10828 B71-10311 03

Improved circuit avoids premature power transistor failure
 NPO-11365 B71-10370 02

Radiographic inspection specifications for electronic components
 M-FS-20723 B71-10438 01

Pseudo-saturating power converter
 NPO-11368 B72-10042 01

Circuit controls turn-on current
 NPO-11339 B72-10079 01

Heart simulator
 M-FS-21609 B72-10131 02

Spark ultrasonic transducer
 M-FS-21233 B72-10594 04

Waveguide switch protector
 NPO-11592 B72-10705 01

Design of microstrip components by computer
 LANGLEY-11210 B72-10741 01

- Digital data command bus
NPO-11637 B73-10035 01
- Braid read-only memory
NPO-11570 B73-10136 01
- Design and material selection for inverter transformer cores
NPO-11726 B73-10142 04
- Computer program for the design of toroidal transformers
LEWIS-11878 B73-10214 09
- Isolated output for class-D dc amplifiers
M-FS-21616 B73-10331 02
- Flat-band assembly for toroidal transformer cores
NPO-11966 B73-10391 08
- Design parameters for toroidal and bobbin magnetics
NPO-13441 B73-10459 01
- Isolated transfer of analog signals
LANGLEY-11312 B73-10513 02
- System for simultaneous, bidirectional data transmission
MSC-14810 B75-10171 01
- High-voltage stepping supply with fast settling time
GSFC-11844 B75-10191 02
- TRANSIENT HEATING**
Automated electronic system for measuring thermophysical properties
LANGLEY-11883 B75-10160 03
- TRANSIENT LOADS**
Water impact loads
M-FS-21955 B72-10621 09
- High-power ac/dc variable load simulator
MSC-14788 B75-10108 02
- TRANSIENT PRESSURES**
Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
- Propellant feed systems transients
MSC-17848 B72-10677 06
- TRANSIENT RESPONSE**
Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
- Double phase-lock loop with rapid transient response - A concept
GSFC-10864 B71-10349 01
- Vibration testing and analysis using holography
M-FS-21050 B71-10352 03
- Dynamics of short pressure probes
LEWIS-11293 B71-10374 09
- Thermal scale modeling
M-FS-21268 B71-10432 03
- Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
- Vibrational transfer functions for complex structures
M-FS-20744 B72-10648 09
- Computer program for transient response of structural rings subjected to fragment impact
LEWIS-11926 B73-10064 09
- Versatile electronic load
NPO-13202 B73-10458 03
- System for measuring transients in fluid flow
ARC-10852 B74-10217 03
- TRANSISTOR AMPLIFIERS**
Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
- A new dry biomedical electrode
JSC-14321 B73-10146 02
- TRANSISTOR CIRCUITS**
Transistor current and voltage limiting switch
NPO-11166 B70-10414 01
- Man-machine interactive system simplifies computer-aided circuit design
LANGLEY-10711 B70-10660 09
- Gate protective device for insulated gate field-effect transistors
M-FS-21626 B72-10149 01
- A new packaging and testing concept for microelectronic components
M-FS-20936 B73-10109 01
- Fast recharge circuit for q-switched lasers
GSFC-11510 B73-10257 02
- Active tuning circuit
GSFC-11340 B73-10334 02
- Ankylosis-stabilized oscillator
GSFC-11513 B73-10392 02
- Versatile electronic load
NPO-13202 B73-10458 03
- TRANSISTOR LOGIC**
Circuit minimizes current drain caused by neon indicator lamps
NUC-10157 B70-10534 01
- TRANSISTORS**
Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
- Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
- Superconducting "transistor" acts as high-speed switch
HQ-10547 B70-10082 01
- Reduction of background in an X-ray proportional counter
HQ-10253 B70-10169 02
- A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01
- Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01
- Nondissipative optimum charge regulator
XGS-10439 B70-10186 01
- Fuse-holder concept expedites electronic component changes
M-FS-20615 B70-10191 01
- Voltage regulator with multiple parallel power source sections
GSFC-10891 B70-10195 02
- Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
- Two terminal current limiter
NPO-11350 B70-10232 01
- Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
- Visual device to assist computer program debugging
MSC-15833 B70-10308 09
- Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
- Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
- Integrated circuit random-access memory decoder
ERC-10211 B70-10372 01
- Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 B70-10374 09
- Efficient/reliable dc-to-dc inverter circuit
XGS-06226 B70-10425 01
- Load cell for thermionic converter tests
LEWIS-11068 B70-10470 01
- Glass-to-metal bonding process improves stability and performance of semiconductor devices
ERC-10264 B70-10477 01
- P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
- Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 B70-10508 01
- Latching overcurrent circuit breaker
NPO-11131 B70-10524 01
- Redundant electronic circuit provides fail-safe control
NUC-10389 B70-10565 01
- Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01
- Study of second breakdown in power transistors using infrared techniques
M-FS-20748 B71-10021 01
- Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 B71-10022 03
- Saturation current spikes eliminated in saturable core transformers
ERC-10125 B71-10142 01
- Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
- Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
- Voltage regulator dissipates minimal power and functions as a voltage divider
B71-10367 01
- Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
- Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
- RF-controlled implantable solid state switch
ARC-10136 B71-10426 01
- Radiographic inspection specifications for electronic components
M-FS-20723 B71-10438 01
- Analog table look-up device identifies unknown terrain
MSC-13816 B72-10033 03
- Pseudo-saturating power converter
NPO-11368 B72-10042 01
- Voltage-tunable parallel-T filter for remote operation
NPO-11165 B72-10077 01
- Precision voltage regulator
NPO-11502 B72-10092 01
- Time-lapse camera for microscopy
ARC-10423 B72-10125 05
- Driver circuit for inductive loads
ARC-10073 B72-10268 01
- An ingestible temperature-transmitter
ARC-10583 B72-10275 01
- Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
- A simplified, compact static shift register
HQ-10723 B72-10591 02

- An economical arterial-pulse-wave transducer
GSFC-11531 873-10046 05
- Portable light detection system for the blind
M-FS-22403 873-10099 05
- Hermetic-coaxial package design for microwave transistors
GSFC-10791 873-10427 01
- GaAs transistors formed by Be or Mg ion implantation
LANGLEY-11204 873-10442 01
- A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
LANGLEY-11536 874-10234 01
- Solid state remote power controllers for 120 VDC power systems
LEWIS-12523 875-10150 02
- Three-phase dc motor decoder
GSFC-11824 875-10247 02
- TRANSIT TIME**
Digital decoder for phase-delay coded data
GSFC-10894 871-10345 01
- TRANSITION LAYERS**
Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 874-10129 09
- TRANSITION METALS**
Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 870-10021 01
- TRANSITION TEMPERATURE**
Preparation of highly fluorinated polyurethanes
NPO-10767 871-10005 04
- Glass transition temperatures of liquid prepolymers obtained by thermal penetrometry
NPO-11730 873-10036 04
- TRANSLATING**
High-impact dynamic-response analysis of nonlinear structures
NPO-11716 871-10134 09
- TRANSLATORS**
Device for printing alphanumeric listings and digital data plots
LEWIS-10954 870-10002 02
- TRANSUNAR INJECTION**
Quick response targeting program
M-FS-15157 871-10147 09
- TRANSMISSION**
Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 870-10298 01
- Isolated-line commutator-amplifier
M-FS-20734 871-10148 02
- Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 871-10297 04
- High torque bellows seal rotary drive
LEWIS-11813 872-10681 07
- TRANSMISSION CIRCUITS**
Computer program analyzes and monitors electrical power systems (POSIMO)
GSFC-11505 872-10610 09
- Digital transmitter for data bus communications system
JSC-14558 873-10511 02
- TRANSMISSION EFFICIENCY**
Beam squint correction for a diplex, retrodirective phased array
GSFC-11023 871-10444 02
- TRANSMISSION FLUIDS**
Improved circumferential shaft seal
LEWIS-11873 874-10062 07
- TRANSMISSION LINES**
Measuring the conductor spacing in flat conductor cables
M-FS-20560 870-10015 08
- Economical weatherproof helical antenna
XKS-08485- 870-10016 01
- Fixture for plating stripped conductors of flat conductor cables /FCC/
M-FS-20122 870-10719 08
- Remote coupling of air lines
NUC-10225 871-10101 07
- A frequency division multiplex technique for transmitting commands
KSC-10521 871-10169 02
- Automatic transmission line monitor
KSC-10385 871-10288 02
- Folding tools for flat conductor cable harnesses
M-FS-20121 871-10415 08
- Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 871-10419 08
- Spurue cutoff tool for molded FCC plugs
M-FS-20236 871-10421 08
- Folding tool for preparing FCC molded-plug terminations
M-FS-20116 871-10422 08
- Multiedge slitter for FCC
M-FS-20112 871-10457 08
- Cable insulation cut-through tester
M-FS-20114 871-10459 08
- Arc protection system for high-power RF amplifiers
NPO-11560 872-10099 02
- High q band-pass resonators utilizing composite band-stop resonator pairs
GSFC-10990 874-10035 02
- Dual-band ridged waveguide
LANGLEY-11781 875-10091 01
- Transmission line for S-band masers
NPO-13504 875-10126 03
- Flammability study of materials in oxygen environments
M-FS-23306 875-10310 04
- TRANSMISSION LOSS**
A radiometric method for measuring the insertion loss of radome materials
NPO-11423 870-10519 02
- TRANSMITTANCE**
High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 870-10211 02
- Holographic analysis of thin films
M-FS-20823 870-10654 08
- A topological approach to computer-aided sensitivity analysis
ARC-10214 871-10164 02
- Automatic amino acid analyzer
ARC-10215 871-10165 04
- Unsupported thin film beam splitter
GSFC-10525 872-10471 02
- Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 872-10579 05
- Improved transmittance measurement with a magnesium oxide coated integrating sphere
LEWIS-11840 872-10717 04
- TRANSMITTER RECEIVERS**
Antenna-array, phase quadrature tracking system
MSC-12205 870-10095 02
- Very high frequency digital rangine system
MSC-15763 870-10284 02
- Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 870-10335 01
- Radial rotating antenna-feed system
GSFC-11013 871-10025 01
- Dual-frequency feed-horn antenna
GSFC-10820 871-10056 02
- Tone-activated, remote, alert communication system
NPO-11132 871-10307 02
- TRANSMITTERS**
Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 870-10055 03
- Telemetry for impact acceleration measurements
ARC-10289 870-10079 01
- Block-coded communications
NPO-11397 870-10242 02
- Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 870-10505 01
- Intruder detection system
ARC-10097 870-10638 02
- Miniature implantable instrument measures and transmits heart function data
ARC-10201 871-10163 05
- A frequency division multiplex technique for transmitting commands
KSC-10521 871-10169 02
- An improved telemetry system
ARC-10336 871-10201 01
- Aircraft-crash-locating transmitter features design improvements
M-FS-16609 871-10213 02
- Hermetically sealed motion transmitter
MSC-17348 871-10328 07
- Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 871-10343 03
- Implanted telemeter for electrocardiogram and body temperature
XAC-08505 872-10035 05
- Narrowband, crystal-controlled biomedical telemetry system
ARC-10708 872-10255 01
- An ingestible temperature-transmitter
ARC-10583 872-10275 01
- Digital transmitter for data bus communications system
JSC-14558 873-10511 02
- Dually-mode-locked ND: YAG laser
GSFC-11746 874-10038 03
- Transmitter switch for high-power microwave output
NPO-13439 875-10122 02
- TRANSONIC FLOW**
Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 870-10132 09
- Wind tunnel investigations at transonic Mach numbers
M-FS-20895 871-10254 06

- A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
Total-pressure measurement in pulsating flows
LEWIS-12077 B73-10252 03
- TRANSONIC SPEED**
Short-duration, transonic flow, variable-porosity test section
M-FS-20509 B70-10256 03
Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
Transonic divider for gas chromatograph effluents
NPO-11479 B72-10706 03
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09
- TRANSPARENCE**
Miniature spray-painting booth
MSC-15811 B70-10549 03
Improved reflective coating for integrating spheres
GSFC-10855 B71-10110 03
Nondestructive testing of adhesive bonds by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
Man-machine communication - A transparent switchboard for computers
MSC-13746 B71-10263 02
Measuring internal dimensions of small transparent objects
LANGLEY-10712 B71-10505 08
Angular velocity and acceleration meter
LEWIS-11466 B72-10183 06
Transparent polymeric laminates
ARC-10783 B73-10341 04
Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03
- TRANSPONDERS**
A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
Circuit suppresses spurious sidebands
MSC-13425 B70-10541 01
Radial rotating antenna-feed system
GSFC-11013 B71-10025 01
Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
Code-regenerative clean-up loop for a ranging transponder
NPO-11707 B73-10141 02
Means for mapping radiated fields and for measuring differential movement of antenna elements
NPO-13053 B73-10452 02
- TRANSPORT AIRCRAFT**
Computation of aerodynamic interference between lifting surfaces and lift- and cruise-fans
ARC-10833 B74-10113 09
- TRANSPORT PROPERTIES**
Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
Survey of heat transfer to near critical fluids
LEWIS-11289 B71-10262 03
Flame zone of a composite propellant expanded by a laser source
LANGLEY-10660 B71-10335 03
- Computer program for calculation of thermodynamic and transport properties of complex chemical systems
LEWIS-11997 B73-10231 09
Computer program for calculating water and steam properties
LEWIS-12206 B74-10123 09
Properties of air and combustion products of fuel with air
LEWIS-12402 B75-10004 03
Laser velocimeter measurements of high-speed compressible flows
ARC-10781 B75-10141 03
Computer program for calculating water and steam properties
LEWIS-12519 B75-10187 09
Computer program for calculating thermodynamic and transport properties of fluids
LEWIS-12520 B75-10188 09
- TRANSPORT THEORY**
Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
- TRANSPORT VEHICLES**
Brushless direct-current motors
NPO-11351 B70-10234 02
Positive fast sealing union connections
LEWIS-11290 B72-10133 06
Tandem steerable running gear
M-FS-22012 B72-10499 07
- TRANSPORTATION**
A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
Inflatable stretcher to transport patients
HQ-10179 B70-10254 05
Nonlinear damping in structures
M-FS-20701 B70-10341 03
Reliability Analysis Model
M-FS-14513 B70-10614 09
Systems approach provides management control of complex programs
M-FS-20791 B70-10647 06
Torch kit for welding in difficult areas
MSC-15704 B71-10070 08
Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
Floating baffle to improve efficiency of liquid transfer from tanks
KSC-10639 B73-10190 07
System for measuring passenger reaction to transportation-vehicle vibration
LANGLEY-11353 B73-10436 05
Two-directional active damper
LANGLEY-11815 B75-10259 06
- TRANSPORTER**
Simple two-speed tape transport drive
GSFC-10981 B71-10409 06
- TRANSVERSE WAVES**
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
- TRAPPED PARTICLES**
Laser scanned image sensors using photoconductors with deep traps
NPO-13131 B75-10112 03
- TRAPS**
Sorption vacuum trap
ERC-90051 B70-10449 06
Optical contamination during thermal testing in vacuum
M-FS-20736 B70-10659 03
- Improved molecular sorbent trap for high-vacuum systems
ARC-10056 B71-10478 03
- TRAVELING WAVE AMPLIFIERS**
Event-sequence detector
NPO-11703 B73-10278 01
Improved masers for X-band and Ku band
NPO-11437 B73-10293 02
- TRAVELING WAVE MASERS**
Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02
- TRAVELING WAVE TUBES**
Fabrication of electroacoustic RF amplifiers
ERC-10266 B70-10460 01
Angular magnetic field beam improves efficiency in klystrons and traveling wave tubes
LEWIS-11610 B73-10206 03
- TRAVELING WAVES**
Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
- TRAYS**
Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06
- TREATMENT**
Medical vest broadens treatment capability
KSC-10577 B70-10529 05
- TREES (MATHEMATICS)**
Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09
High speed sequential decoder
ARC-10657 B72-10568 09
- TRIANGLES**
ELAS8 - Computer program for linear structure equilibrium problems
NPO-11555 B71-10185 09
Isogrid structure
M-FS-21567 B72-10323 06
- TRIANGULATION**
Automatic lightning location system
AEC-10077 B72-10372 02
- TRIGGER CIRCUITS**
Pental circuit may be used in conversionless decimal counter
HQ-10146 B70-10336 01
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
Pulsed high-power arc heater with improved cathode and triggering mechanism
ARC-10173 B72-10048 03
- TRIGONOMETRIC FUNCTIONS**
Coarse roll-rate gain-control circuit
ARC-10064 B71-10204 01
Programmed physiological infusion system
ARC-10447 B72-10126 05
Sensitive holographic detection of small aerodynamic perturbations
ARC-10422 B72-10209 03
Indefinite integrals of products of some exponential and trigonometric functions
LEWIS-11493 B72-10225 09
Sunspot analysis and prediction
M-FS-21724 B72-10317 03

TRIMERS

New type of trifunctional alcohol
NPO-10714 872-10553 04

TRIODES

Thermionic triode generates ac power
ERC-10284 870-10499 01
Multichannel intercom with simultaneous
send/receive capability
M-FS-18808 871-10228 02
Improved solid-state triode construction
NPO-13064 874-10107 01
Graphite ionization vacuum gauge
LANGLEY-11338 874-10136 03

TRITIUM

Direct analysis of hydrogen/deuterium
mixtures: A concept
NPO-11322 872-10244 03
Long life neutron generator target using
deuterium pass-through structure
LEWIS-11866 874-10063 03
Method of measuring the thickness of
radioactive thin films
LEWIS-11971 874-10065 03
A high yield neutron target
LEWIS-12058 874-10066 03

TRUCKS

Hydraulic brake safety valve
M-FS-16444 870-10207 07

TRUNCATION ERRORS

Errors in hybrid computers
M-FS-21289 872-10141 02

TRUSSES

Repair of brazed steel
honeycomb-sandwich panels with vertical
pins only
MSC-15831 870-10624 08

TUBE ANODES

Coaxial anode improves sensitivity of gas
radiation counters
GSFC-11492 874-10229 03

TUBE HEAT EXCHANGERS

Strain compatibility tests for sprayed
foam cryogenic insulation
M-FS-16063 870-10423 04
Concentric tubes cold-bonded by drawing
and internal expansion
ARG-90033 871-10050 08

TUBES

Simple, shock-free, quick-release
connector - A concept
LEWIS-11178 871-10146 07
A lightweight, high output soil sampler
NPO-10797 871-10159 07
Analysis and design of a flat central
finned-tube radiator
LEWIS-10893 871-10399 09

TUNERS

Microwave cryogenic thermal-noise
standards
NPO-11424 871-10139 03
Infrared tunable laser: A concept
ARC-10463 875-10081 03

TUNGSTEN

A stabilized low-frequency
alternating-current electric arc
LEWIS-10442 870-10065 01
The effects of nuclear power generators
upon electronic instrumentation
NPO-11217 870-10272 03
Biaxial prestressing of brittle materials
M-FS-20272 870-10316 04
Fabrication of hollow ball bearings by
diffusion welding
LEWIS-11026 870-10331 08
High temperature ion source
ERC-10197 870-10379 03

Contact material for pressure-sintering
ferrites

ERC-10213 870-10380 01
Copper-titanium eutectic alloy improves
electrical and mechanical contact to silicon
carbide
ERC-10256 870-10444 04
High-temperature rapid-response
thermocouple for reducing atmospheres
NUC-10530 870-10564 03
Improved method for cladding the inside
of metal tubes
LEWIS-11174 870-10723 08
Inexpensive high-temperature furnace for
thermocouple calibration
NUC-10372 871-10046 03
Accurate pointing of tungsten welding
electrodes
ARG-10449 871-10048 08
Fabrication of large tungsten structures
by chemical vapor deposition
LEWIS-11239 871-10212 08
Durable cathodes for high-power
inert-gas arcs
LEWIS-11162 871-10264 03
Improved brazing technique for pyrolytic
graphite
NPO-12026 871-10293 08
Superconductor transition temperatures
study
M-FS-21247 871-10385 03
Computer program optimizes design of
nuclear radiation shields
LEWIS-10998 871-10400 09
Exothermic brazing units
M-FS-21435 871-10467 08
Particle detection by a light-scattering
technique
ARC-10384 872-10160 03
Solar sensor with autocollimator
ARC-10148 872-10192 03
Nonmetallic impurities improve
mechanical properties of vapor-deposited
tungsten
LEWIS-10800 872-10454 04
Spark ultrasonic transducer
M-FS-21233 872-10594 04
Tungsten-reinforced tantalum
LEWIS-11750 872-10684 04
Improved transmittance measurement
with a magnesium oxide coated integrating
sphere
LEWIS-11840 872-10717 04
Low cost uniform heat source
LEWIS-11903 873-10011 02
Refractory inserts used to form cooling
passages in cast superalloy turbine vanes
LEWIS-11169 873-10013 08
Metal-metal reinforced laminar
composites
LEWIS-11790 873-10068 04
Casting copper to tungsten for
high-power arc lamp cathodes
LEWIS-12169 874-10011 04
High strength nickel base alloy, WAZ-16,
for applications up to 2200 F
LEWIS-12270 874-10082 04
Advanced tungsten fiber-reinforced
nickel superalloy
LEWIS-12394 874-10248 04

TUNGSTEN ALLOYS

Directionally solidified superalloy
HQ-10522 870-10058 04
Tungsten fiber-reinforced nickel
superalloy with greatly increased strength
at 2000 degrees F
LEWIS-10933 870-10183 04

Self-replaceable thermocouple for molten
steel bath - A concept
NUC-10223 871-10125 01

Common bearing material has highest
fatigue life at moderate temperature
LEWIS-11592 872-10382 04

Advanced alloy design technique: High
temperature cobalt base superalloy
LEWIS-10436 872-10514 04

High-intensity source of extreme
ultraviolet
HQ-10754 872-10528 03

Production of small diameter
high-temperature-strength refractory metal
wires
LEWIS-11802 873-10003 08

Metal-metal reinforced laminar
composites
LEWIS-11790 873-10068 04

TUNGSTEN CARBIDES

Technique for improving hydrodynamic
gyro bearings
M-FS-20764 870-10301 06
High-friction mechanical grips
JSC-19260 873-10234 06

TUNGSTEN FLUORIDES

Reactions of technetium hexafluoride
with nitric acid, nitrosyl fluoride, and nitril
fluoride
ARG-10412 870-10233 04

Fabrication of large tungsten structures
by chemical vapor deposition
LEWIS-11239 871-10212 08

TUNGSTEN OXIDES

Sensitive gaseous hydrogen detection
system
M-FS-21161 871-10209 04

TUNING

A self-tuning filter
ARC-10264 870-10337 01
Sinusoidal-pressure generator for testing
dynamic pressure probes
LEWIS-11094 870-10352 06

Thermal tuning of organic dye lasers
ERC-10187 870-10480 02
Laser wavelength selector and output
coupler
ERC-10248 870-10507 02

System automatically tunes hydrogen
masers
HQ-10502 870-10616 02

Oscillator with wide dynamic tuning
range
GSFC-11086 871-10286 01

Microresonator for damping flow
oscillations
M-FS-18401 872-10105 06

A voltage-tunable three-terminal Gunn
device
HQ-10783 872-10518 01

Acousto-optic filter for electronic laser
tuning
HQ-10715 872-10520 03

Mechanically and thermally stable maser
cavity resonator
HQ-10790 872-10523 01

Active tuning circuit
GSFC-11340 873-10334 02

Meter circuit for tuning RF amplifiers
NPO-11865 873-10389 02

Tuneable diode laser spectrometer with
integral grating
LANGLEY-11830 875-10262 03

Reflected-wave maser
NPO-13490 875-10279 03

TUNNEL DIODES

- Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
- Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
- Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
- Automatic cross-sectioning and monitoring system locates defects in electronic devices
GSFC-11221 B71-10221 01
- Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01

TURBIDITY

- Particle detection by a light-scattering technique
ARC-10384 B72-10160 03

TURBINE BLADES

- Small hydraulic turbine drives
LEWIS-11064 B70-10416 07
- Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
- Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- Refractory inserts used to form cooling passages in cast superalloy turbine vanes
LEWIS-11169 B73-10013 08
- Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 B73-10411 02
- Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
- Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
LEWIS-11490 B74-10124 04
- A method for measuring cooling air flow in base coolant passages of rotating turbine blades
LEWIS-12433 B75-10017 03
- Investigations of multiple jets in a crossflow
LEWIS-12102 B75-10149 03
- Calculation procedure for transient heat transfer to a cooled plate in a heated stream whose temperature varies arbitrarily with time
LEWIS-12558 B75-10244 03
- Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 B75-10246 04
- Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03
- Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
LEWIS-12554 B75-10290 04

TURBINE ENGINES

- Heat-resistant pressure probe with high-frequency response
NPO-11292 B70-10252 06
- Fabrication of hollow ball bearings by diffusion welding
LEWIS-11026 B70-10331 08
- Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
LEWIS-10856 B70-10468 07
- Simple technique extends life of angular-contact ball bearings
LEWIS-11117 B70-10535 07

- Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
- High-speed, self-acting shaft seal (circumferential type)
LEWIS-11274 B72-10447 07
- Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
- Computer program for predicting off-design performance of centrifugal compressors
LEWIS-12186 B74-10067 09
- Design criteria monograph on axial flow turbines
LEWIS-12376 B75-10009 06

TURBINE INSTRUMENTS

- Small turbine-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
- Use of small turbine-type flowmeters to measure flow in large pipes
LEWIS-11851 B72-10631 06
- High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04

TURBINE PUMPS

- Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
- Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
- Study aids accuracy of turbopump axial thrust analysis
M-FS-18774 B71-10020 07
- Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07
- Turbopump thermodynamic cooling
M-FS-21597 B72-10408 06
- Design criteria monograph for high-load high-speed rolling-contact bearings
LEWIS-11823 B72-10627 04
- Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08
- Freon 21 bearing lubrication and coolant system
HQ-10302 B72-10651 06
- Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
M-FS-22678 B73-10518 06
- Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
- Design criteria monograph on turbopump gears
LEWIS-12377 B75-10010 06
- Design criteria monograph on turbopump systems
LEWIS-12499 B75-10135 06

TURBINE WHEELS

- Simple turbine balancing test apparatus
LEWIS-11658 B72-10377 07
- Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
- A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
- New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04
- In-service turbine wheel crack monitor
LEWIS-12422 B75-10012 02

TURBINES

- Discharge coefficients for thick-plate orifices
LEWIS-11067 B70-10062 06
- Mechanical properties of Rene-41 affected by rate of cooling after solution annealing
M-FS-18790 B70-10213 04
- Swirl-can combustor segment
LEWIS-11082 B70-10322 07
- Condensation of wet vapors in turbines
NPO-10773 B70-10613 09
- Spray momentum measuring system
MSC-12305 B71-10137 05
- Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
- Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04
- Strain gage performance above 1033 K
M-FS-18831 B71-10225 04
- Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
- Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
- Plasma-sprayed metal-glass fluoride coatings for lubrication to 1170 K (1650 F)
LEWIS-11930 B74-10016 04
- Computer program for thermodynamic analysis of open-cycle multishaft power system
LEWIS-12324 B75-10002 09
- Turbine design review text
LEWIS-12560 B75-10287 06

TURBOCOMPRESSORS

- Computer program for definition of transonic axial-flow compressor blade rows
LEWIS-12325 B75-10021 09

TURBOFAN ENGINES

- A computer program for calculating design and off-design performance for turbojet and turbofan engines
LEWIS-12010 B73-10232 09
- A computer program for calculating design and off-design performance of two- and three-spool turbofans with as many as three nozzles
LEWIS-12011 B73-10245 09
- Computer program for the attenuation of high bypass turbofan engine noise
LEWIS-12179 B75-10242 09

TURBOFANS

- Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
- Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
LEWIS-12366 B75-10066 04

TURBOGENERATORS

- High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07

TURBOJET ENGINE CONTROL

- Vented vectoring-nozzle for STOL and V/STOL aircraft
ARC-10839 B74-10058 06

TURBOJET ENGINES

- Gas turbine combustor insensitive to compressor outlet distortion
LEWIS-10286 B70-10312 07

- A computer program for calculating design and off-design performance for turbojet and turbofan engines
LEWIS-12010 B73-10232 09
- A computer program for calculating design and off-design performance of two- and three-spool turbofans with as many as three nozzles
LEWIS-12011 B73-10245 09
- Improved air atomizing splash-groove fuel injector reduces pollutant emissions from turbojet engines
LEWIS-12417 B75-10190 06
- TURBOMACHINE BLADES**
- Computer program for calculating aerodynamic forces on blade sections
LEWIS-11382 B71-10153 09
- Computer program calculates transonic velocities in turbomachines
LEWIS-10977 B71-10402 09
- Split stator vane row for fans and compressors
ARC-10288 B71-10528 06
- FORTAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane
LEWIS-11237 B72-10405 09
- Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
- Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
LEWIS-11635 B72-10586 09
- TURBOMACHINERY**
- Vibration damping of mechanical seals
M-FS-14160 B70-10068 07
- Investigation of positive shaft seals
M-FS-18589 B70-10176 07
- Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
- Variables in turbine erosion
M-FS-18677 B70-10325 03
- Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
- Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09
- Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
- Design criteria monograph on turbopump inducers
LEWIS-11824 B72-10635 08
- Computer program for transient response of structural rings subjected to fragment impact
LEWIS-11926 B73-10064 09
- Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 B73-10411 02
- Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09
- Design criteria monograph on centrifugal flow turbopumps
LEWIS-12346 B74-10228 06
- Design criteria monograph on turbopump gears
LEWIS-12377 B75-10010 06
- Design criteria monograph on turbopump systems
LEWIS-12499 B75-10135 06
- TURBOSHAFTS**
- Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
- Design criteria monograph on turbopump shafts and couplings
LEWIS-12204 B74-10014 07
- Computer program for thermodynamic analysis of open-cycle multishaft power system
LEWIS-12324 B75-10002 09
- TURBULENCE**
- Laser-Doppler gas velocimeter
M-FS-20583 B70-10143 02
- Resonance tube igniter
LEWIS-11219 B70-10618 04
- Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
- Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- Optical probing of supersonic flows with statistical correlation
M-FS-20642 B71-10252 03
- Laser velocimeter measurements of high-speed compressible flows
ARC-10781 B75-10141 03
- New aircraft instrument indicates turbulence intensity
LANGLEY-11833 B75-10227 03
- TURBULENCE METERS**
- Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
- TURBULENT BOUNDARY LAYER**
- Experimental investigation and analysis of two sources of nozzle-thrust misalignment
NPO-11355 B70-10406 06
- Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09
- Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06
- TURBULENT DIFFUSION**
- Swirl-can combustor segment
LEWIS-11082 B70-10322 07
- TURBULENT FLOW**
- Optical probing of supersonic aerodynamic turbulence
M-FS-20686 B70-10665 03
- Heat-transfer data for hydrogen
M-FS-18754 B70-10667 03
- Prediction of windage power loss in alternators
LEWIS-10939 B71-10074 06
- Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09
- Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
- Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
LEWIS-11636 B72-10070 09
- Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09
- Cryogenic gel flow viscometer
ARC-10523 B72-10180 03
- Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07
- Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
- Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04
- Particle-fluid interactions for flow measurements
M-FS-21727 B73-10117 06
- Computer program for the prediction of reorientation flow dynamics
LEWIS-11816 B73-10307 09
- Three-dimensional gas turbulence measurement with a laser-Doppler velocimeter system
M-FS-22713 B73-10371 04
- Porous surface microphone for measuring acoustic signals in turbulent windstreams
ARC-10776 B73-10490 03
- Probe for measuring turbulent real-time shear-stress waves
ARC-10755 B74-10072 03
- Sound separation probe
LEWIS-12507 B75-10286 03
- TURBULENT MIXING**
- Turbulent mixing film cooling correlation
LEWIS-11417 B72-10326 07
- TURNSTILE ANTENNAS**
- Improved modified turnstile antenna
MSC-12209 B70-10482 01
- Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
- Flared-cone turnstile antenna
LANGLEY-10970 B73-10425 02
- TWISTING**
- Test fixture insures high degree of accuracy in flexure tests
NUC-10246 B70-10358 07
- New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
- Isogrid structure
M-FS-21567 B72-10323 06
- TWO BODY PROBLEM**
- Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
- Separation of two bodies in space
NPO-10663 B70-10625 09
- Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
- TWO DIMENSIONAL FLOW**
- Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
- Theoretical study of a plasma accelerator
NPO-11480 B70-10683 03
- An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07
- TWO PHASE FLOW**
- Water-filled heat pipe useful at moderate temperatures
M-FS-20543 B70-10106 03
- Metal cooldown, flow instability, and heat transfer in two-phase hydrogen flow
M-FS-18696 B70-10259 04

Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07
Separation of gas from liquid in a two-phase flow system
NPO-11556 B73-10383 03

TYPEWRITERS

High-speed digital plotter
ARG-90001 B71-10049 02
No-err typing aids
M-FS-15218 B72-10498 07

U

U BENDS

Split radius-form blocks for tube benders
MSC-15773 B70-10038 08

UDIMET ALLOYS

Erosion of metals by multiple impacts with water
HQ-10591 B71-10197 04

ULLAGE

Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
Main tank injection pressurization program
LEWIS-11368 B72-10069 09
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 B72-10276 03
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 B72-10277 03

ULNA

In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05

ULTRAHIGH FREQUENCIES

A range-rate extraction unit for determining Doppler effect
GSFC-10750 B70-10025 01
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 B70-10505 01
Lightweight S-band helix antenna
KSC-10392 B70-10538 02
Swept-frequency UHF radiometer for deep probes of earth - A concept
MSC-13428 B70-10617 02
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
A pseudo random-access synchronous meteorological satellite system
GSFC-10895 B71-10220 02
Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
Deep space network
NPO-11562 B72-10043 01
Heart catheter cable and connector
ARC-10406 B72-10200 05
Circularly-polarized multiband telemetry tracking antenna
NPO-11264 B73-10288 02

Flared-cone turnstile antenna
LANGLEY-10970 B73-10425 02

ULTRAHIGH VACUUM

Improved magnetron cold-cathode ion source
LANGLEY-10387 B70-10023 02
Ultra-high molecular sink vacuum chamber
NPO-10799 B70-10130 03
Vacuum leak detector features higher sensitivity
ERC-10034 B70-10493 03
An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03
Quadrupole ionization gage measures ultrahigh vacuum
LANGLEY-10397 B70-10620 03
Optimum doping achieves high quantum yields in GaAs photoemitters
M-FS-20962 B71-10357 03
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06

ULTRASONIC AGITATION

Spark ultrasonic transducer
M-FS-21233 B72-10594 04

ULTRASONIC RADIATION

Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
Laser beam deflection control: A concept
MSC-13814 B72-10411 02
A system for early warning of bearing failure
M-FS-21877 B72-10494 06
Improved ultrasonic biomedical measuring apparatus
ARC-10597 B72-10695 05

ULTRASONIC SOLDERING

An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01

ULTRASONIC TESTS

Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 B70-10055 03
Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
Ultrasonics used for high-precision nondestructive inspection of brazed joints
NUC-10352 B71-10045 08
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06
Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
Prototype ultrasonic instrument for quantitative testing
M-FS-22350 B73-10051 02
Bonded panel, flaw detection standards
LANGLEY-11399 B73-10240 06

Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
M-FS-22678 B73-10518 06
X-ray opaque additive for inspection of weld joints
M-FS-22896 B73-10528 08
Ultrasonic scanner for footprint identification
NPO-13055 B74-10212 03
Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06
Isometric scan method for ultrasonic evaluation of composite panels
LEWIS-12437 B75-10014 01

ULTRASONIC WAVE TRANSDUCERS

Instrument accurately measures stress loads in threaded bolts
M-FS-21121 B71-10486 01
Isotropic pyrolytic carbons
ARC-10532 B72-10029 04
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
Ultrasonic bone densitometer
M-FS-20994 B72-10450 05
Spark ultrasonic transducer
M-FS-21233 B72-10594 04
Improved ultrasonic biomedical measuring apparatus
ARC-10597 B72-10695 05
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
Transmission Oscillator Ultrasonic Spectrometer (TOUS): A new research instrument
LANGLEY-11735 B75-10035 03
Ultrasonic detection of flaws in large structural areas
MSC-19499 B75-10201 06

ULTRASONIC WELDING

Aluminum foil interconnects for solar cell panels
ARC-10374 B72-10058 08

ULTRASONICS

Improved beam-lead interconnection structure for uncased integrated circuit chips
LANGLEY-10227 B70-10018 01
Acoustic vibration test detects intermittent electrical discontinuities
MSC-15158 B70-10118 01
Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
Locating tube blockage that X-ray cannot detect
NUC-10386 B71-10129 06
Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
Qualifications and certification of nondestructive testing personnel
M-FS-20850 B71-10271 06
Ultrasonic calibration device
LANGLEY-11435 B73-10420 03
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07

ULTRAVIOLET ABSORPTION

Thermoelectric radiometer
ARC-10138 B70-10056 02
A transmitting and reflecting diffuser for ultraviolet light
LANGLEY-10385 B72-10611 03

ULTRAVIOLET FILTERS

Flexible, low-cost silicon solar cell arrays

LEWIS-11069 B72-10177 02

ULTRAVIOLET PHOTOMETRY

Vacuum leak detector features higher sensitivity

ERC-10034 B70-10493 03

Rotary shutter mechanism contains optical elements

GSFC-11244 B72-10387 03

Visualization of smoke stack plume

LANGLEY-11675 B74-10208 04

ULTRAVIOLET RADIATION

Compact apparatus for photogeneration of hydrated electrons

ARG-10487 B70-10036 03

Improved ultraviolet resonance lamp

ARC-10030 B70-10237 01

Noncontacting-optical-strain device

NPO-10778 B70-10292 03

Controlled etching of printed-circuit boards

XGS-06306 B70-10327 04

Improved photoionization mass spectrometer

LANGLEY-10180 B70-10402 04

Improved linings for integrating spheres

MSC-12237 B70-10413 03

Luminescent screen composition and apparatus

ERC-10010 B70-10440 01

Color television system using single gun color cathode ray tube

ERC-10098 B70-10464 02

Photochromism of dihydroquinolines

HQ-10574 B70-10574 04

Improved cover for cadmium sulfide solar cells

LEWIS-11003 B70-10584 01

Optical contamination during thermal testing in vacuum

M-FS-20736 B70-10659 03

Improved protection for silicon solar cells

LEWIS-11065 B70-10706 08

Preparation of perfluoropolyether prepolymers

NPO-10765 B71-10004 04

Improved thermal paint formulation

M-FS-14706 B71-10180 03

Polymerization of perfluorobutadiene at near-ambient conditions

NPO-10447 B71-10291 04

Increasing the response of PIN photodiodes to the ultraviolet

ARC-10274 B72-10053 03

Solar sensor with autocollimator

ARC-10148 B72-10192 03

Plasma calcining of pigment particles for thermal control coatings

M-FS-21267 B72-10320 04

Study of in-situ degradation of thermal control surfaces

M-FS-20892 B72-10336 04

High-intensity source of extreme ultraviolet

HQ-10754 B72-10528 03

Sputter etching of hemispherical bearings

HQ-10712 B72-10534 08

Helium window for shock-tube monochromators

NPO-11852 B72-10556 03

A transmitting and reflecting diffuser for ultraviolet light

LANGLEY-10385 B72-10611 03

Thin-film ultraviolet detector and spectrometer

NPO-11432 B72-10701 03

Ultraviolet and thermally stable polymer compositions

ARC-10592 B72-10709 04

High-temperature-radiation analyzer

ARC-10565 B73-10017 03

Two new methods to increase the contrast of track-etch neutron radiographs

LEWIS-11893 B73-10027 03

Improved channel multiplier for radiation-and-particle detectors

NPO-12128 B74-10275 03

Chemical-ionization visible and ultraviolet gas lasers: A concept

NPO-13289 B75-10115 03

ULTRAVIOLET REFLECTION

Heat-rejection windows for telescopes

M-FS-20634 B70-10386 04

Ultraviolet reflective coating

GSFC-11786 B73-10469 04

ULTRAVIOLET SPECTRA

Simple spectroscopy used with solid state image amplifier over wide spectral range

M-FS-21345 B71-10378 03

Interferometric rotation sensor

ARC-10278 B72-10274 03

A magnetically focused image tube employing an opaque photocathode

GSFC-11602 B73-10255 02

Optical detection of oil on water

ARC-10649 B73-10268 03

ULTRAVIOLET SPECTROMETERS

Spectrometer

GSFC-11694 B74-10181 03

Ultraviolet hydrogen-discharge lamp

MSC-14793 B75-10272 03

ULTRAVIOLET SPECTROSCOPY

Ultraviolet interferometer

HQ-10546 B71-10026 03

UMBILICAL CONNECTORS

Umbilical disconnect actuator

NPO-11202 B70-10170 07

UNDERWATER TESTS

Gage for measuring coastal erosion and sedimentation

LANGLEY-10779 B70-10629 01

New method speeds body inert gas saturation and utilizes surface

decompression

MSC-13543 B71-10330 05

Analytic model for assessing thermal performance of SCUBA divers

ARC-10927 B75-10029 09

UNIFIED S BAND

Deep space network

NPO-11562 B72-10043 01

UNIONS (CONNECTORS)

Ultrasonics used for high-precision nondestructive inspection of brazed joints

NUC-10352 B71-10045 08

Positive fast sealing union connections

LEWIS-11290 B72-10133 06

UNITS OF MEASUREMENT

Psychrometric chart for physiological research

ARC-10394 B71-10470 03

UNIVAC COMPUTERS

NASTRAN computer system level 12.1

GSFC-10991 B71-10285 09

Model optimization using statistical estimation

M-FS-22873 B74-10189 09

Fortran Automatic Code Evaluation System (FACES)

M-FS-22910 B74-10190 09

Eigenvalue algorithm based on a combined sturm sequence and inverse iteration technique (EASI)

NPO-13368 B74-10215 09

Computer program for numerical analysis of stiffened shells of revolution

M-FS-23027 B75-10094 09

Handbook for estimating toxic fuel hazards

M-FS-21114 B75-10198 04

UNIVAC 1108 COMPUTER

Computer program for calculating water and steam properties

LEWIS-12519 B75-10187 09

Computer program for calculating thermodynamic and transport properties of fluids

LEWIS-12520 B75-10188 09

Improved axisymmetric potential flow computer program

LEWIS-12387 B75-10243 09

UNIVAC 1108 COMPUTER

PERT "C"

M-FS-20164 B70-10184 09

Expanded sun-look angle program

MSC-13176 B70-10602 09

Optimum Multi-Impulse Rendezvous Program

MSC-13139 B70-10623 06

Non-symmetrical two dimensional scattering program

NPO-11576 B71-10007 09

Symmetrical two dimensional scattering program

NPO-11578 B71-10008 09

Radiation view factor program

M-FS-21075 B71-10106 09

Multi-dimensional real Fourier transform

NPO-11648 B71-10133 09

High-impact dynamic-response analysis of nonlinear structures

NPO-11716 B71-10134 09

Subroutines for evaluating single and multiple integrals using modified Romberg method

NPO-11718 B71-10138 09

ELAS8 - Computer program for linear structure equilibrium problems

NPO-11555 B71-10185 09

DSIF station schedules

NPO-11547 B71-10243 09

Variable order integrators for the numerical solution of ordinary differential equations

NPO-11643 B71-10248 09

Battery simulation program

NPO-11580 B71-10250 09

Determination of radiation interchange factors

MSC-13475 B71-10295 09

Energy levels and transition probability matrix elements of ruby for maser applications

NPO-11687 B71-10308 09

Thermal analysis system /TAS-1/ program

NPO-11849 B71-10386 09

Double precision trajectory program /DPTRAJ 2.2C/

NPO-11798 B71-10390 09

Microbial burden prediction model program

NPO-11709 B71-10401 09

Fracture mechanics evaluation of
Ti-6Al-4V pressure vessels
MSC-13995 B71-10413 09
Manpower management information
system /MIS/
M-FS-21477 B71-10431 09
Monte Carlo program for the transport
of neutrons and gamma rays
LEWIS-11403 B71-10490 09
Synthesis of dynamic systems
M-FS-21490 B71-10491 09
A study of high frequency nonlinear
combustion instability in baffled annular
liquid propellant rocket motors
NPO-11800 B71-10532 09
Structural design and stress analysis
program for advanced composite
filament-wound axisymmetric pressure
vessels (COMTANK)
NPO-11943 B72-10073 09
Response of a panel structure to
reverberant acoustic excitation
M-FS-21774 B72-10603 06
Method for nonlinear exponential
regression analysis
M-FS-21965 B72-10622 09
Chrysler improved numerical differencing
analyzer for third generation computers
CINDA-3G
MSC-11653 B72-10721 09
Analysis of circuits including magnetic
cores (MTRAC)
NPO-11494 B72-10724 02
PPUAS-photopeak unfolding and
self-shielding program
NPO-13188 B73-10087 09
A general purpose maneuver turns
computer program
NPO-13213 B73-10088 09
Eigenvalue routine by Sturm sequence
method
NPO-11805 B73-10114 09
Automated Shell Theory for Rotating
Structures (ASTROS)
M-FS-21970 B73-10115 09
Spectral Analysis Program (SAP)
JSC-14310 B73-10227 09
Computer program to determine the
irrotational nozzle admittance
LEWIS-12019 B73-10233 09
Characteristics of FORTRAN
LANGLEY-11177 B73-10322 09
Marshall system for aerospace simulation
(MARSYAS)
M-FS-22672 B73-10432 09
Design standards for low-profile flanges
M-FS-22708 B74-10033 09
Marshall information retrieval and display
system (MIRADS)
M-FS-22536 B74-10043 09
Dynamic transformation method
M-FS-22848 B74-10076 06
Computer program for calculating water
and steam properties
LEWIS-12206 B74-10123 09
Eigenfunction solution of damped
structural systems: DAMP
NPO-13480 B74-10169 09
Computerized logic design of digital
circuits
M-FS-22401 B74-10225 09
JPL transient radiation analysis by
computer program (JTRAC)
NPO-13470 B75-10053 09
Four-dimensional worldwide atmospheric
models: ANYPT and ANYRG
M-FS-22838 B75-10093 09

Computer program for analysis of
vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
Table-lookup algorithm for pattern
recognition: ELLTAB (Elliptical Table)
MSC-14866 B75-10236 03
Reliability computation from reliability
block diagrams
NPO-13304 B75-10276 07
UNIVERSAL TIME
Externally programmed variable timer
M-FS-20776 B71-10437 04
UNMANNED SPACECRAFT
Radioisotope thermionic power supply
for spacecraft
ARC-10438 B72-10212 03
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
Spacecraft attitude determination by
fanscan technique
ARC-10827 B74-10198 02
UNSTEADY FLOW
Theoretical study of a plasma
accelerator
NPO-11480 B70-10683 03
Dynamic response of viscous
compressible fluids in rigid tubes
M-FS-20542 B71-10269 03
Total-pressure measurement in pulsating
flows
LEWIS-12077 B73-10252 03
Laser velocimeter for simultaneous
two-dimensional velocity measurements
ARC-10637 B73-10267 02
UPSTREAM
Pressure sensitive gas flow meter
ARC-10219 B72-10049 06
URANIUM
The effects of nuclear power generators
upon electronic instrumentation
NPO-11217 B70-10272 03
URANIUM 233
Data from various sources provide
standard single-level resonance parameters
for uranium 233
NUC-10229 B70-10357 03
URANIUM 235
Single-level resonance parameters fit
nuclear cross-sections
NUC-10101 B70-10686 03
URBAN DEVELOPMENT
Systems approach provides management
control of complex programs
M-FS-20791 B70-10647 06
URBAN RESEARCH
Urban air pollution dispersion model
AEC-10004 B72-10003 03
UREAS
Water purification by reverse osmosis
using heterocyclic polymer membranes
LANGLEY-10514 B72-10230 04
Purification of contaminated water by
filtration through porous glass
ARC-10655 B72-10412 04
Reverse-osmosis membranes by plasma
polymerization
ARC-10696 B72-10710 04
New urea-absorbing polymers for
artificial kidney machines
NPO-13620 B75-10336 04
URETHANES
Improved reinforcement for openings in
difficult fabrics
MSC-13554 B70-10489 08
Inexpensive, removable coating for
plaster tooling
MSC-15819 B70-10666 04

Flame resistant elastic elastomeric
fibers
MSC-13923-4 B72-10005 04
URINALYSIS
Increasing the sensitivity of the Jaffe
reaction for creatinine
NPO-11587 B73-10021 04
Automated drug identification system
NPO-13063 B74-10213 05
Automated mass spectrometer/analysis
system: A concept
NPO-13572 B75-10331 05
URINE
Bacterial adenosine triphosphate as a
measure of urinary tract infection
GSFC-11092 B71-10051 05
Chemical pretreatment for the distillation
of urine
JSC-14225 B73-10224 04
Gas chromatography of volatile organic
compounds
JSC-14428 B73-10406 04
Improved methods for counting bacteria
in physiological fluids
GSFC-11917 B74-10231 05
UROLOGY
New urea-absorbing polymers for
artificial kidney machines
NPO-13620 B75-10336 04
UTILITIES
Hot tap thermowell installation
MSC-12427 B71-10302 07
Effect of thermal discharges on the mass
energy balance of Lake Michigan
AEC-10013 B72-10004 03
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01

V

V GROOVES

Vee-notch tool cuts specimens
M-FS-20730 B70-10411 06
Improved source of infrared radiation for
spectroscopy
M-FS-20613 B71-10031 03

V/STOL AIRCRAFT

Very low velocity flow sensor uses fluidic
techniques
ERC-10404 B70-10461 03
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
Thrust vector control for V/STOL
aircraft
ARC-10788 B74-10049 06
Vented vectoring-nozzle for STOL and
V/STOL aircraft
ARC-10839 B74-10058 06
Investigation of exit-velocity stratification
effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09
Calculation of aerodynamic
characteristics of STOL aircraft
ARC-10882 B74-10221 09

VACCINES

Covalent bonding of antibodies of
polystyrene latex beads: A concept
MSC-13906 B72-10006 05

VACUUM

Four-way, full-throttling valve concept
MSC-13437 B70-10165 07
Low heat-gain cryogenic-liquid transfer
system
MSC-15165 B70-10306 07

- Multilayer screen gives cathode ray tube high contrast
 ERC-10217 B70-10454 01
 Control system for an artificial heart
 LEWIS-11057 B70-10469 05
 New method for photoresist stripping
 ERC-10239 B70-10497 04
 Flexible electrical conductors for high-temperature switchgear
 LEWIS-11109 B70-10569 01
 Low temperature ablation models made by pressure/vacuum application
 LANGLEY-10676 B70-10578 04
 Lightweight, self-evacuated insulation panels
 LEWIS-90361 B70-10646 03
 High temperature circuit breaker
 LEWIS-90265 B70-10721 01
 Computer program for thermal analysis of shadow shields in a vacuum
 LEWIS-11236 B71-10115 09
 Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03
 Noise diffraction patterns eliminated in coherent optical systems
 GSFC-11133 B71-10236 03
 Technique for in-place welding of aluminum backed up by a combustible material
 LEWIS-11328 B71-10257 08
 Modification of physical properties of freeze-dried rice
 MSC-13540 B71-10259 04
 Modifications to a vacuum assisted filtering device to minimize contamination
 MSC-13733 B71-10277 04
 High temperature autoclave vacuum seals
 M-FS-21131 B71-10433 08
 Practical method of diffusion-welding steel plate in air
 LEWIS-11387 B71-10455 08
 Aluminum foil interconnects for solar cell panels
 ARC-10374 B72-10058 08
 Optical bonding agents for severe environments
 ARC-10459 B72-10063 04
 Long-term drift of thermocouples at 1600 K
 LEWIS-11471 B72-10176 01
 Watertight low-cost electrical connector
 LEWIS-11552 B72-10506 01
- VACUUM APPARATUS**
 Miniature spray-painting booth
 MSC-15811 B70-10549 03
 Improved burst disk/cutter assembly
 KSC-10516 B70-10583 07
 Vacuum-jacketed rotary joints for pipelines
 KSC-10519 B71-10018 07
 Solid state welding of dispersion-strengthened nickel alloys
 LEWIS-11388 B71-10520 08
 Right angle mounted cold trap
 GSFC-11323 B72-10436 06
 Constant tension device for gravity simulation
 M-FS-21618 B72-10466 06
 Efficient baffle prevents oil backstreaming in diffusion pumps
 LRL-10025 B72-10475 07
 Improved method for reclaiming vacuum diffusion pump oil
 LEWIS-11647 B72-10511 04
- Film holder for curved vacuum platen
 MSC-14120 B72-10542 07
 Tissue holder for experimental and Demonstration Surgery
 LEWIS-11755 B72-10630 05
- VACUUM CHAMBERS**
 Ultra-high molecular sink vacuum chamber
 NPO-10799 B70-10130 03
 Comparison of release torques of tightened bolts in vacuum and air
 M-FS-20773 B70-10395 06
 Dynamic balancing of high-speed rotary machinery
 HQ-10486 B70-10433 06
 Extended-life magnetic recording heads
 GSFC-10097 B70-10521 01
 Filler-wire positioner for electron beam welding
 MSC-15637 B70-10604 08
 An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 B70-10611 03
 Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08
 High density plasma gun generates plasmas at 190 kilometers per second
 M-FS-20589 B71-10383 03
 Combined high vacuum/high frequency fatigue tester
 LEWIS-11210 B71-10405 06
 Improved method for producing metal-reinforced ceramics
 AEC-10070 B72-10234 04
 Laboratory leak tester provides high sensitivity
 AEC-10042 B72-10240 03
 Polymeric coatings using electronic excitation
 HQ-10698 B72-10257 04
 Portable electron beam weld chamber
 MSC-17738 B72-10338 06
 Right angle mounted cold trap
 GSFC-11323 B72-10436 06
 A vacuum chamber feedthrough
 M-FS-21133 B73-10152 01
 Reduced preparation time for thermal vacuum chamber tests
 M-FS-24171 B73-10163 03
 Gas bearing operates in vacuum
 NPO-13425 B75-10052 06
 Characteristics and performance study of mass spectrometer residual gas analyzers
 LEWIS-12393 B75-10185 03
- VACUUM DEPOSITION**
 Holographic analysis of thin films
 M-FS-20823 B70-10654 08
 Compact 20-kiloampere pulse-forming-network capacitor bank
 LEWIS-12009 B73-10171 01
 Casting copper to tungsten for high-power arc lamp cathodes
 LEWIS-12169 B74-10011 04
- VACUUM EFFECTS**
 Effects of decontamination, sterilization, and thermal vacuum on polymeric products
 NPO-11250 B70-10208 04
 Inorganic bonding of semiconductor strain gages
 GSFC-10833 B70-10215 08
- VACUUM FURNACES**
 Fabrication of hollow ball bearings by diffusion welding
 LEWIS-11026 B70-10331 08
- Thermocouple installation in thin-walled tubes
 LEWIS-11222 B70-10655 01
 Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
 LANGLEY-10841 B71-10493 07
 An improved gas extraction furnace
 MSC-14138 B72-10544 04
- VACUUM GAGES**
 Improved magnetron cold-cathode ion source
 LANGLEY-10387 B70-10023 02
 Estimating sensitivity of vacuum gages
 LEWIS-11007 B70-10099 03
 Null type instrument for simplifying two dimensional field plotting
 XLA-08493 B70-10192 01
 Method of predicting ionization-type vacuum gage sensitivity for various gases
 LEWIS-12056 B73-10409 03
 Graphite ionization vacuum gauge
 LANGLEY-11338 B74-10136 03
- VACUUM MELTING**
 Directionally solidified superalloy
 HQ-10522 B70-10058 04
- VACUUM PUMPS**
 Ultra-high molecular sink vacuum chamber
 NPO-10799 B70-10130 03
 A cryopump for cooling objects at a distance
 LRL-10031 B72-10314 03
 Right angle mounted cold trap
 GSFC-11323 B72-10436 06
 Efficient baffle prevents oil backstreaming in diffusion pumps
 LRL-10025 B72-10475 07
 Diffusion pump modification promotes self-cleansing and high efficiency
 LEWIS-12323 B75-10065 06
- VACUUM SYSTEMS**
 Mass spectrometer detects high molecular weight components
 HQ-10477 B70-10057 01
 Dopant for sodium niobate capacitor dielectric
 MSC-11773 B70-10190 01
 Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
 ARG-10412 B70-10233 04
 Open-celled polyurethane foam
 KSC-10517 B70-10349 04
 High expansion coefficient glasses can be sealed to common metals
 LEWIS-10698 B70-10429 08
 Sorption vacuum trap
 ERC-90051 B70-10449 06
 Vacuum leak detector features higher sensitivity
 ERC-10034 B70-10493 03
 Optical contamination during thermal testing in vacuum
 M-FS-20736 B70-10659 03
 Recommended safety guides for industrial laboratories and shops
 SAN-10050 B71-10175 07
 Device prepares aluminum surfaces for welding
 M-FS-20750 B71-10214 07
 Ultrathin gate valve for high vacuum operation
 GSFC-11028 B71-10412 07
 Liquid-fuel valve with precise throttling control
 NPO-10808 B71-10449 07

- Improved vacuum probe collects surface-contamination samples
 LANGLEY-10623 871-10475 05
 Preventing oil migration in vacuum systems
 GSFC-11253 872-10129 04
 Glass technology involved in the manufacture of magnetometer components
 GSFC-11283 872-10132 03
 Simple, reproducible methods for thermal shock testing of brittle materials
 NUC-11020 872-10228 06
 Baffle to confine glow discharge in ion pump
 M-FS-21575 872-10324 03
 New compression molding process of thermosetting plastic compounds
 LANGLEY-10782 872-10356 03
- VACUUM TUBES**
 An improved Orbitron ionization gage measures ultrahigh vacuum
 LANGLEY-10535 870-10611 03
 Advances in electrometer vacuum tube design
 GSFC-10729 870-10696 01
 Determination of nonlinear resistance voltage-current relationships by measuring harmonics
 M-FS-20402 871-10182 01
 Laser frequency modulation with electron plasma
 AEC-10079 872-10373 03
 Integrated structure vacuum tube: A Concept
 ARC-10445 874-10110 01
 Self-protected electrodes limit field-emission current
 ERC-10015 874-10253 01
- VADOSE WATER**
 Phosphorus in land-water systems
 AEC-10049 872-10429 05
- VALVES**
 Solenoid valve performance characteristics studied
 M-FS-12458 870-10066 07
 Thermostatic expansion valve improved by dual pneumatic modulation
 KSC-10072 870-10101 07
 Photoionization mass spectrometer
 HQ-10167 870-10113 03
 Performance-limit criteria for the design of fast-response servo-actuation systems
 LEWIS-11022 870-10152 02
 Novel valve for reciprocating compressors - Concept
 MSC-15060 870-10160 07
 Four-way, full-throttling valve concept
 MSC-13437 870-10165 07
 An electrothermally actuated micro valve
 NPO-10730 870-10171 07
 Improved calibration of accelerometers at temperatures down to -450 degrees F
 M-FS-18561 870-10173 03
 Surface treatment for valve seats
 NPO-10779 870-10202 08
 Hydraulic brake safety valve
 M-FS-16444 870-10207 07
 Fast-acting, four-way slide valve
 M-FS-18608 870-10228 07
 A temperature-controlled fluid flow regulator
 M-FS-14259 870-10283 07
 Volumetric leak detector
 MSC-11325 870-10302 07
- Fluid injection device for high-pressure systems
 MSC-15635 870-10307 06
 Bimorph piezoelectric device functions as flapper valve
 ERC-10082 870-10382 01
 Sorption vacuum trap
 ERC-90051 870-10449 06
 Concept for a gas operated actuator
 NPO-11340 870-10516 07
 Redundant electronic circuit provides fail-safe control
 NUC-10389 870-10565 01
 Bidirectional flow meter
 M-FS-18737 870-10589 07
 Controlled droplet spray generator
 LEWIS-11193 870-10652 07
 Long life, low cost ball valve, with lifted seals and cartridge type construction
 MSC-13430 870-10653 07
 Method of stabilizing fluoric vortex valves and vortex amplifiers
 LEWIS-10553 870-10668 07
 Miniature grinder for solid specimens
 M-FS-20005 871-10059 05
 Chatter-free check valve - A concept
 MSC-13262 871-10067 07
 Automatic amino acid analyzer
 ARC-10215 871-10165 04
 Predicting service life margins
 M-FS-24015 871-10194 06
 Digital computer program for analyzing chugging instabilities
 LEWIS-11294 871-10215 09
 Hydraulic actuator motion limiter ensures operator safety
 ARC-10131 871-10233 07
 Tilt table for ergometers and other biomedical devices
 M-FS-21010 871-10241 05
 Hot tap thermowell installation
 MSC-12427 871-10302 07
 Reduction of valve leakage - A concept
 NPO-12003 871-10315 07
 Improved smoke generator for low-speed wind tunnels
 LANGLEY-10885 871-10337 06
 Distribution and metering system for soil samples
 ARC-10429 871-10481 07
 Reusable anaerobic system for microbiological studies - A concept
 MSC-13920 871-10495 05
 Improved elastomer for use with oxygen difluoride
 ARC-10528 872-10027 04
 Pressure sensitive gas flow meter
 ARC-10219 872-10049 06
 Hydraulic valve lifter remover
 M-FS-21377 872-10110 07
 Preventing oil migration in vacuum systems
 GSFC-11253 872-10129 04
 Fluidic pressure regulators
 ARC-10474 872-10162 06
 Vortex servovalve for fluidic or electrical input
 ARC-10155 872-10173 07
 A piezoelectrically actuated ball valve
 ARC-10338 872-10204 06
 Two-stage coaxial gas compressor
 ARC-10426 872-10210 06
 Counter lung
 ARC-10248 872-10219 05
 Stem clutch for motor driven valve
 LRL-10032 872-10345 07
- Low cost anti-galling bushings
 LEWIS-11724 872-10359 08
 A valve concept for remote fluid flow control
 M-FS-16097 872-10400 07
 Controlled flow assembly
 M-FS-21716 872-10404 07
 Combination pressure regulator and safety valve: A Concept
 MSC-14088 872-10446 06
 Self-aligning, low-pressure sealing poppet valve
 MSC-17745 872-10538 07
 Fill and vent quick disconnect
 M-FS-21822 872-10645 07
 Propellant feed systems transients
 MSC-17848 872-10677 06
 A shut-off valve for flexible tubing
 M-FS-21731 872-10687 07
 Concentric-seating poppet
 NPO-11658 872-10704 06
 Poppet valve tester
 LEWIS-11655 873-10415 07
 Design criteria monograph for valve components
 LEWIS-12327 874-10087 06
 Valve degradation detector
 ARC-10850 874-10117 03
 Therapeutic hand-exercising device with cycling pressure valve
 LANGLEY-11579 874-10140 05
 Throttleable heat pipe
 ARC-10848 874-10173 03
 System for measuring transients in fluid flow
 ARC-10852 874-10217 03
 Design criteria monograph for valve assemblies
 LEWIS-12332 874-10227 06
 Remotely operated gas-pressure regulator and shuttle valve
 NPO-13201 874-10298 07
 Regulator for intravenous feeding
 ARC-10758 875-10083 05
- VAN DE GRAAFF ACCELERATORS**
 Ion implantation reduces radiation sensitivity of metal oxide silicon /MOS/ devices
 LANGLEY-10630 871-10334 01
- VAN DER WAAL FORCES**
 Preparation of magnetic ferrofluids in alternative carrier liquids
 GSFC-10159 870-10011 04
- VANADIUM**
 Bonding titanium to Rene 41 alloy
 ARC-10311 872-10041 08
- VANADIUM ALLOYS**
 Electroplating on titanium alloy
 M-FS-21251 871-10338 08
 Fracture mechanics evaluation of Ti-6Al-4V pressure vessels
 MSC-13995 871-10413 09
 Common bearing material has highest fatigue life at moderate temperature
 LEWIS-11592 872-10382 04
 Braze alloys for high temperature service
 LEWIS-11374 873-10205 06
- VANES**
 Single-phase heat transfer improved by helical inserts in tubes
 LEWIS-11063 870-10362 07
 Split stator vane row for fans and compressors
 ARC-10288 871-10528 06
 Control vane for engine exhaust flow
 LANGLEY-11570 874-10138 06

VAPOR DEPOSITION

Superconducting "transistor" acts as high-speed switch
 HQ-10547 B70-10082 01

Intermolecular bonding of metals or alloys by thermochemical decomposition
 M-FS-13823 B70-10194 08

Improved linings for integrating spheres
 MSC-12237 B70-10413 03

Accurate reassembly of small broken test specimens
 M-FS-16730 B70-10455 07

Visible light electroluminescent diodes of indium-gallium phosphide
 ERC-10303 B70-10474 01

P-n junctions formed in gallium antimonide
 ERC-10302 B70-10500 01

Composite metal-oxide device has voltage sensitive capacitance
 HQ-10594 B70-10687 01

Submersed sensing electrode used in fuel-cell type hydrogen detector
 M-FS-14655 B71-10071 01

Alloy vapor deposition using ion plating and flash evaporation
 LEWIS-11262 B71-10199 08

Simplified procedure for emission spectrochemical analysis
 LEWIS-10985 B71-10359 04

Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
 LANGLEY-10940 B72-10115 04

Advanced protective coating for superalloys
 LEWIS-11473 B72-10150 04

New twisted intermetallic compound superconductor: A concept
 LEWIS-11015 B72-10282 04

Dispersion-strengthened chromium alloy
 LEWIS-10982 B72-10378 04

Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
 LEWIS-10800 B72-10454 04

Tungsten-reinforced tantalum
 LEWIS-11750 B72-10684 04

Glass encapsulation provides extra protection for IC semiconductor devices
 M-FS-21310 B73-10054 01

Vapor phase growth of group 3, 4, and 5 compounds by HCl transport of elements
 LANGLEY-11144 B73-10056 04

Thin film thermoelectric devices as thermal control coatings: A study
 M-FS-21384 B73-10153 04

Vapor-deposited platinum as a fuel-cell catalyst
 M-FS-21317 B73-10475 04

Improved chemical vapor-deposition reactor
 NPO-13650 B75-10212 08

VAPOR PHASES

Updated, expanded, fluid properties handbook
 M-FS-21169 B71-10078 04

Antipollution system to remove nitrogen dioxide gas
 LEWIS-11297 B71-10393 04

High-strength large-diameter carbon-base fibers
 LEWIS-11167 B71-10403 04

Improved elastomer for use with oxygen difluoride
 ARC-10528 B72-10027 04

Boiler for generating high quality vapor
 LEWIS-11345 B72-10135 06

Feedback control of variable conductance heat pipes
 ARC-10460 B72-10169 03

Liquid methane gelled with methanol and water reduces rate of nitrogen absorption
 LEWIS-11574 B72-10330 06

Temperature control of a cryogenic bath
 HQ-10788 B72-10532 03

VAPOR PRESSURE

Properties of nonaqueous electrolytes
 LEWIS-11017 B70-10080 04

Solubility of non-polar gases in electrolyte solutions
 LEWIS-11052 B70-10114 04

High temperature ion source
 ERC-10197 B70-10379 03

P-n junctions formed in gallium antimonide
 ERC-10302 B70-10500 01

Starter propellants and auxiliary generators for gas turbines
 M-FS-18813 B70-10701 07

The heat pipe - A simple, versatile, efficient heat transfer tool
 NPO-11598 B71-10109 06

CSM programs SM RCS propellant quantity gaging systems program
 MSC-17308 B71-10130 09

Cadmium plated steel caps seal anodized aluminum fittings
 M-FS-20137 B71-10355 05

Halogenation of microcapsule walls
 ARC-10410 B72-10161 04

Improved synthesis of intermetal compounds
 HQ-10690 B72-10172 04

Restartable heat pipe
 ARC-10198 B72-10188 03

Safe transport of diborane in a dual refrigerant system: A concept
 ARC-10559 B72-10277 03

VAPOR TRAPS

Quantitative conversion of water to carbon dioxide
 NPO-10731 B70-10013 04

Deadweight calibration of pressure gages without contamination
 M-FS-18690 B70-10586 07

VAPORIZERS

Large-capacity pump vaporizer for liquid hydrogen and nitrogen
 M-FS-20508 B70-10368 07

The water-cryogen heat exchanger
 NUC-11029 B70-10591 03

Improved smoke generator for low-speed wind tunnels
 LANGLEY-10885 B71-10337 06

VAPORIZING

Fuse and switch functions combined within a single housing
 HQ-10497 B70-10003 01

Improved electron-beam welding technique
 M-FS-20714 B70-10127 08

Improved electron beam welding technique
 M-FS-20753 B70-10412 08

Analysis of surface ablation of noncharring materials
 ARC-10223 B70-10615 09

Improved sheath removal technique for very small thermocouples
 LEWIS-11228 B71-10179 01

Submerged gas injector expels cryogenic liquids from tanks
 LEWIS-11231 B71-10219 07

Flame zone of a composite propellant expanded by a laser source
 LANGLEY-10660 B71-10335 03

Literature review and experimental investigation of heat pipes
 M-FS-21074 B71-10353 03

Advances in induction-heated plasma torch technology
 LEWIS-11354 B72-10151 03

Closed-cycle power supply for fluidic control systems
 ARC-10480 B72-10163 06

Devolatilization of polymer resins
 GSFC-11358 B72-10280 04

Multipurpose top for liquid helium Dewar
 ARC-10533 B72-10302 03

Laser mass spectrometer
 ARC-10687 B72-10571 03

Thermal-powered reciprocating pump
 NPO-11417 B72-10723 06

Experimental verification of computer spray-combustion models
 ARC-10689 B73-10031 03

Detection of cracks in surface insulation
 MSC-14187 B74-10095 04

Flat device for heat concentration or dispersion
 LANGLEY-11699 B74-10291 03

VAPORS

Colorimetric detection of ethylene glycol vapor
 MSC-13222 B70-10031 03

Estimating sensitivity of vacuum gages
 LEWIS-11007 B70-10099 03

Miniature spray-painting booth
 MSC-15811 B70-10549 03

Low temperature ablation models made by pressure/vacuum application
 LANGLEY-10676 B70-10578 04

Laser beam hydrocarbon detector
 ARC-10156 B70-10631 03

Fabrication of large tungsten structures by chemical vapor deposition
 LEWIS-11239 B71-10212 08

Radial heat flux transformer
 NPO-10828 B71-10311 03

Promotion of dropwise condensation of ethyl alcohol, methyl alcohol, and acetone by polytetrafluoroethylene
 LANGLEY-10940 B72-10115 04

Restartable heat pipe
 ARC-10198 B72-10188 03

Sonic limitations and startup problems of heat pipes
 AEC-10036 B72-10368 03

Efficient baffle prevents oil backstreaming in diffusion pumps
 LRL-10025 B72-10475 07

Overflow sensor for cryogenic-fluid vessels
 NPO-10619 B72-10554 03

Computer method for identification of boiler transfer functions
 LEWIS-11808 B72-10582 09

Numerical solution of potential flow problems in terms of flux components
 M-FS-21751 B72-10667 09

VARACTOR DIODES

A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01

- System automatically tunes hydrogen masers
 HQ-10502 B70-10616 02
 Oscillator with wide dynamic tuning range
 GSFC-11086 B71-10286 01
 Varactor diode assembly with low parasitic reactances
 GSFC-11617 B75-10031 01
- VARIABILITY**
 Induction generator produces constant-frequency voltage from variable-speed drive
 ERC-10065 B70-10478 02
 Method of identifying clusters representing statistical dependencies in multivariate data
 ARC-10744 B75-10140 09
- VARIABLE GEOMETRY STRUCTURES**
 Variable-volume atomic storage vessel for hydrogen masers
 GSFC-11895 B75-10248 03
- VARIANCE (STATISTICS)**
 Statistical analysis tables for truncated or censored samples
 M-FS-21024 B71-10351 03
 Elements of orbit-determination theory - Textbook
 NPO-11466 B71-10425 03
 Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
 M-FS-22838 B75-10093 09
- VARIATIONS**
 Heat-resistant pressure probe with high-frequency response
 NPO-11292 B70-10252 06
 Electronic ripple indicator
 KSC-10162 B71-10170 01
 Analytical procedure for estimating reliability of randomly excited structures
 NPO-11618 B71-10189 06
 Variable-area nozzle automatically controls fluid flow
 LEWIS-11217 B71-10222 07
 Strain gage performance above 1033 K
 M-FS-18831 B71-10225 04
 Wind tunnel investigations at transonic Mach numbers
 M-FS-20895 B71-10254 06
 Precision calibration and reference voltage source for data acquisition systems
 M-FS-20950 B71-10298 02
 Atmospheric density variations related to internal gravity waves
 M-FS-21637 B72-10143 03
 Optimization technique for problems with an inequality constraint
 ARC-10522 B72-10222 09
 A concept for universal pliers
 KSC-10768 B72-10685 07
- VARNISHES**
 Reinforcement of polymeric structures with asbestos fibrils
 HQ-09954 B70-10020 03
 New hyperthermal thermosetting heterocyclic polymers
 LANGLEY-10221 B70-10403 04
 Soluble high molecular weight polyimide resins
 LEWIS-11056 B70-10504 04
 Investigation to identify paint coatings resistive to microorganism growth
 M-FS-20458 B71-10310 04
- New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
 LEWIS-11323 B72-10175 04
- VECTOR ANALYSIS**
 Expanded sun-look angle program
 MSC-13176 B70-10602 09
- VECTOR SPACES**
 Principles of error detection and error correction codes
 NPO-11487 B71-10408 02
- VECTORCARDIOGRAPHY**
 Compression and R-wave detection of ECG/VCG data
 MSC-14126 B72-10391 05
 Vectorcardiogram
 JSC-14427 B73-10401 02
 Computer program for analysis of vectorcardiograms (VECTAN II)
 MSC-14386 B75-10106 09
- VECTORS (MATHEMATICS)**
 Overlapped conic simulation of three-body trajectories
 MSC-13460 B70-10536 03
 Optimum Multi-Impulse Rendezvous Program
 MSC-13139 B70-10623 06
 Ray tracing program with options for diffraction gratings
 GSFC-11305 B71-10294 09
 Study-simulation of space station dynamics
 M-FS-21227 B71-10382 09
 Minimum switching network for generating the weight of a binary vector
 NPO-11590 B73-10274 09
- VEGETABLES**
 Preservation of flavor in freeze dried green beans
 JSC-14149 B73-10092 05
- VEHICLE WHEELS**
 Tandem wheel drop-legs for standard truck trailer
 M-FS-13466 B70-10088 07
 Two-speed wheel-drive system without lubrication
 M-FS-20645 B70-10193 07
- VEHICLES**
 Optimum structural design based on reliability analysis
 NPO-11261 B70-10399 06
- VEINS**
 Combination syringe provides air-free blood samples
 MSC-12320 B70-10545 05
- VELOCITY**
 Electrodynamic induction flowmeter
 HQ-10230 B70-10024 01
 A range-rate extraction unit for determining Doppler effect
 GSFC-10750 B70-10025 01
 Optimal electric-drive system for vehicles
 NPO-11210 B70-10435 02
 Novel wave generator adaptable to indoor surfing
 LEWIS-11096 B70-10563 03
 Multiple focusing magnets used for velocity selection of atoms
 GSFC-10128 B70-10581 03
 Frost as an insulator
 NUC-11039 B70-10593 03
 Expanded sun-look angle program
 MSC-13176 B70-10602 09
 Optimum Multi-Impulse Rendezvous Program
 MSC-13139 B70-10623 06
- Flow characteristics of an air jet impinging on a flat surface
 LEWIS-11129 B70-10670 03
 High-impact dynamic-response analysis of nonlinear structures
 NPO-11716 B71-10134 09
 Spray momentum measuring system
 MSC-12305 B71-10137 05
 Erosion of metals by multiple impacts with water
 HQ-10591 B71-10197 04
 New procedure for determining minimum time orbit transfers
 M-FS-14804 B71-10376 09
 Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
 LEWIS-10788 B71-10392 09
 Simple two-speed tape transport drive
 GSFC-10981 B71-10409 06
 Velocity accelerator for particles
 NPO-11349 B72-10082 03
 Inertial reference unit
 NPO-11518 B72-10094 02
 Speed enhancement of complementary MOS devices
 ARC-10387 B72-10184 01
 Improved high-performance shock tube
 NPO-11885 B72-10242 03
 High efficiency collector for microwave tubes
 LEWIS-11192 B72-10259 03
 Composite mobile system for holographic nondestructive testing
 M-FS-21704 B72-10351 03
 Frequency-wavelength calculator with table of dielectric properties
 GSFC-11200 B72-10472 03
 Analysis and computer programs to calculate acoustic wave properties of baffled chambers
 LEWIS-11529 B72-10577 09
 Computer program for quasi-three-dimensional calculation of surface velocities and choking flow for turbomachine blade rows
 LEWIS-11635 B72-10586 09
 Propellant feed systems transients
 MSC-17848 B72-10677 06
- VELOCITY DISTRIBUTION**
 Method of calculating blade-to-blade plane flow in centrifugal pump
 M-FS-18087 B70-10124 06
 Computer program for analysis of flow across a gas turbine seal
 LEWIS-10975 B70-10317 09
 Water velocity meter
 LANGLEY-10619 B70-10662 02
 Computer program for calculating aerodynamic forces on blade sections
 LEWIS-11382 B71-10153 09
 Computing incompressible laminar and turbulent boundary layer formation
 LEWIS-11190 B71-10155 09
 Landing dynamics program for impact attenuating vehicles /LANDIT/
 NPO-10840 B71-10472 09
 A low-altitude satellite interaction study
 GSFC-11384 B71-10499 09
 A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
 NPO-11800 B71-10532 09

- Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 874-10130 09
- VELOCITY MEASUREMENT**
Laser-Doppler gas velocimeter
M-FS-20583 870-10143 02
The effect of object motion in Fraunhofer holography with application to velocity measurements
MSC-12295 870-10268 03
Electrical instrument measures position and velocity of shock waves
ARC-10356 871-10143 03
Device measures conductivity and velocity of ionized gas streams
XAC-05695 871-10235 03
Improved charged-particle analyzer - A concept
XAC-05506 871-10283 03
Computer program calculates transonic velocities in turbomachines
LEWIS-10977 871-10402 09
Anemometer calibrator
M-FS-21424 871-10519 03
Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 872-10310 03
Use of small turbine-type flowmeters to measure flow in large pipes
LEWIS-11851 872-10631 06
Laser velocimeter with transverse and on-axis sensitivity
ARC-10642 873-10262 03
Laser velocimeter for simultaneous two-dimensional velocity measurements
ARC-10637 873-10267 02
Cosmic dust or other similar outer-space particles location detector
GSFC-11291 873-10282 02
Small portable speed calculator
M-FS-22638 873-10329 07
Three-dimensional gas turbulence measurement with a laser-Doppler velocimeter system
M-FS-22713 873-10371 04
Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 873-10417 03
Pseudotachometer for mobile metabolic analyzer
M-FS-22909 873-10480 02
True airspeed measured by airborne laser Doppler velocimeter
ARC-10763 873-10506 02
Particle impact location detector
GSFC-11829 874-10230 03
Micrometeoroid composition analyzer
GSFC-11892 874-10287 01
Laser velocimeter measurements of high-speed compressible flows
ARC-10781 875-10141 03
Start/stop switches for testing detonation velocity of explosives
KSC-10793 875-10255 01
- VENTILATION**
Modified faceplate assembly for stud-welding gun
M-FS-16725 870-10044 08
Atmospheric composition affects heat- and mass-transfer processes
HQ-10271 870-10094 04
Elimination of gases and contamination from water
KSC-10502 870-10456 05
- Ion-tracer anemometer
M-FS-21399 873-10151 04
- VENTILATORS**
Portable circuit-interruption indicator
KSC-10546 871-10246 02
- VENTING**
An explosion-proof battery case
MSC-12335 870-10304 01
Pilot-boost control valve
M-FS-20635 870-10558 07
Cavitating Venturi sump
ARC-10504 872-10012 06
Thermal control for storage of cryogenic propellants in a common-bulkhead tank: A concept
ARC-10558 872-10276 03
Safe transport of diborane in a dual refrigerant system: A concept
ARC-10559 872-10277 03
An economical vent cover
M-FS-20692 872-10348 07
Free-radical solution-polymerization of trifluoronitrosomethane with tetrafluoroethylene
ARC-10567 872-10419 04
Multiple-compartment venting program
MSC-19428 875-10234 06
- VENTS**
Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 870-10122 03
Volumetric leak detector
MSC-11325 870-10302 07
Wall attachment, fluoric crossover "AND" gate
XLA-07391 871-10178 07
Hydraulic expansion process shapes large metal sheets
MSC-12432 871-10511 07
Counter lung
ARC-10248 872-10219 05
An economical vent cover
M-FS-20692 872-10348 07
Remote control flare stack igniter for combustible gases
M-FS-21675 872-10352 07
- VENTURI TUBES**
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 871-10219 07
Low cost, logarithmic mass flow computer
LEWIS-11001 871-10407 06
Cavitating Venturi sump
ARC-10504 872-10012 06
- VENUS (PLANET)**
New microwave spectrometer/imager has possible applications for pollution monitoring
NPO-10535 870-10187 03
- VERSATILITY**
Metal alloy resistivity measurements at very low temperatures
NUC-10557 871-10104 04
- VERTEBRAL COLUMN**
Mathematical model for predicting human vertebral fracture
ARC-10691 873-10033 05
- VERTICAL LANDING**
Optimized braking of landing vehicles with atmospheric drag
NPO-11402 872-10084 06
- VERTICAL PERCEPTION**
Eye point-of-regard system
ARC-10360 871-10476 05
- VERTICAL TAKEOFF AIRCRAFT**
Attitude controls for VTOL aircraft
XAC-8972 871-10202 05
Bonding titanium to Rene 41 alloy
ARC-10311 872-10041 08
- VERY HIGH FREQUENCIES**
A range-rate extraction unit for determining Doppler effect
GSFC-10750 870-10025 01
Very high frequency digital rangine system
MSC-15763 870-10284 02
Characteristics of step-recovery-diode frequency multipliers
M-FS-20558 870-10505 01
Automatic lightning location system
AEC-10077 872-10372 02
- VERY HIGH FREQUENCY RADIO EQUIPMENT**
Composite antenna feed system operates from VHF to X-band
GSFC-11046 871-10410 02
Radio direction finder
NPO-11573 872-10508 02
Pre-emphasis determination for an S-band constant bandwidth FM/FM station
M-FS-22135 873-10170 02
- VERY LOW FREQUENCIES**
RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 870-10664 02
Time-synchronized VLF phase-tracking receiver
NPO-11600 873-10275 02
- VESTS**
Medical vest broadens treatment capability
KSC-10577 870-10529 05
- VHF OMNIRANGE NAVIGATION**
Radio direction finder
NPO-11573 872-10508 02
- VIBRATION**
Prediction of faults in components of machinery in motion
GSFC-10801 870-10116 06
Portable vibration exciter
KSC-10069 870-10339 07
Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 870-10389 07
Artificial-feedback system
GSFC-10324 870-10421 02
Electronic scanning of 2-channel monopulse patterns
GSFC-10299 870-10485 02
Pilot-boost control valve
M-FS-20635 870-10558 07
Metal drilling with portable hand drills
M-FS-15180 870-10594 08
Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 870-10690 03
Subminiature transducer measures unsteady pressures
ARC-10349 871-10114 01
Predicting vibrational failure of flexible ducting
M-FS-16750 871-10150 06
Effect of size on cracking of materials
NPO-11602 871-10158 04
Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 871-10168 08
Analytical procedure for estimating reliability of randomly excited structures
NPO-11618 871-10189 06

- Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 871-10226 02
- On-line analysis of random vibrations
ARC-10154 871-10284 09
- Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 871-10297 04
- Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 871-10430 06
- Isotropic pyrolytic carbons
ARC-10532 872-10029 04
- A new vibration dampening adhesive
MSC-17668 872-10284 04
- Composite mobile system for holographic nondestructive testing
M-FS-21704 872-10351 03
- Simple turbine balancing test apparatus
LEWIS-11658 872-10377 07
- Prediction of flow-induced failures of braided flexible hoses and bellows
M-FS-19004 872-10407 06
- Multiple reaction mass and isolation system
M-FS-24119 872-10441 06
- Effects of nonuniform swash-plate stiffness on coupled blade-control system dynamics and stability
LANGLEY-11068 872-10749 06
- Hybrid coordinate formulation used for the design of attitude control systems for flexible spacecraft
NPO-11714 873-10300 09
- Analysis of nonlinear vibrations of cylinders
NPO-11736 873-10302 09
- Industrial filter bags cleaned by high-frequency vibration: A concept
M-FS-24445 873-10398 06
- Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
M-FS-22678 873-10518 06
- Apparatus for cutting elastomeric materials
NPO-13146 873-10521 07
- Piezoelectric relay
GSFC-11627 874-10089 01
- Dynamometer for measuring machining forces in two perpendicular directions
M-FS-22899 874-10148 07
- VIBRATION DAMPING**
- Immersed ultrasonic inspection of high acoustical attenuative structures
MSC-15702 870-10055 03
- Vibration damping of mechanical seals
M-FS-14160 870-10068 07
- Investigation of positive shaft seals
M-FS-18589 870-10176 07
- Low-noise flow valve for air ducts
MSC-13441 870-10640 07
- Chatter-free check valve - A concept
MSC-13262 871-10067 07
- Vibration analysis by time-average holography
LANGLEY-10614 871-10333 03
- VIBRATION EFFECTS**
- Design and development criteria for metal bellows
M-FS-20640 870-10125 05
- Microresonator for damping flow oscillations
M-FS-18401 872-10105 06
- Analytical failure determination of flow-induced fatigue in bellows
M-FS-18178 872-10488 06
- Heated bimetal strip prevents damage of bearings by vibration
NPO-11870 873-10348 06
- Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 874-10205 09
- VIBRATION ISOLATORS**
- Flexible protection for metal bellows
KSC-10520 870-10350 06
- Compression springs used for vibration isolation
NPO-11012 870-10523 07
- Connector locking device
KSC-10537 870-10553 01
- Digital simulation error curves for a spring-mass-damper system
M-FS-20770 871-10003 09
- Flexible thermal device
M-FS-21630 872-10612 04
- Modular support blocks for fluid lines
MSC-19335 874-10023 07
- Control of elasticity in cast elastomeric shock/vibration isolators
KSC-10850 874-10039 07
- Cushion module for stowing electronic equipment
ARC-10779 874-10073 04
- Shock and vibration isolation mount for small electronic components
NPO-13253 875-10049 01
- Two-directional active damper
LANGLEY-11815 875-10259 06
- VIBRATION MEASUREMENT**
- Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 870-10173 03
- Portable low-frequency vibration measuring and recording system
LANGLEY-10543 871-10126 02
- Laser vibration analyzer
XAC-01670 871-10249 03
- Vibration testing and analysis using holography
M-FS-21050 871-10352 03
- Analysis of multilayered fiber composites
LEWIS-11347 871-10372 09
- Spectral analysis of multiple time series
M-FS-18859 872-10614 09
- Vibrational transfer functions for complex structures
M-FS-20744 872-10648 09
- Vibration measurement by pulse differential holographic interferometry
LANGLEY-11092 873-10075 03
- System for measuring passenger reaction to transportation-vehicle vibration
LANGLEY-11353 873-10436 05
- VIBRATION METERS**
- Improved system for measuring speed of rotating machinery
ARC-10413 872-10179 07
- VIBRATION MODE**
- Vibration detection using lasers
ARC-10389 871-10145 03
- Vibration analysis by time-average holography
LANGLEY-10614 871-10333 03
- Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 871-10507 06
- Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 871-10535 09
- Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 872-10206 03
- Dynamic transformation method
M-FS-22848 874-10076 06
- VIBRATION TESTS**
- Portable vibration exciter
KSC-10069 870-10339 07
- X-connectors for tubing - Feasibility study
M-FS-20827 870-10418 07
- Dynamic balancing of high-speed rotary machinery
HQ-10486 870-10433 06
- Variable sweep-rate shortens dynamic testing time
LEWIS-11238 871-10251 02
- Criteria for vibration testing
GSFC-10737 871-10266 06
- Improved relay chatter detector
NPO-10355 871-10292 01
- Vibration testing and analysis using holography
M-FS-21050 871-10352 03
- Optical bonding agents for severe environments
ARC-10459 872-10063 04
- Control of acceleration in sine/random vibration tests
NPO-11482 872-10091 02
- Standard environmental testing practices
NPO-11567 872-10101 02
- Computer-controlled vibration testing
NPO-11612 873-10138 02
- Simultaneous processing of vibration test data
NPO-11616 873-10139 01
- A multidegree-of-freedom vibrational apparatus
GSFC-11302 873-10332 06
- Flaw detection by mechanical resonant measurement
M-FS-19218 873-10440 03
- VIBRATIONAL SPECTRA**
- Improved transducer for squeeze-film bearings
M-FS-20826 871-10140 07
- Criteria for vibration testing
GSFC-10737 871-10266 06
- Mechanical impedance and acoustic mobility measurement techniques of specifying vibration environments
M-FS-22016 873-10059 06
- VIBRATIONAL STRESS**
- Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 870-10417 08
- Computer program for stress, vibration, and buckling characteristics of general shells of revolution
LANGLEY-11369 873-10363 09
- VIBRATORY LOADS**
- Swashplate feedback control for tilt-rotor aircraft
ARC-10854 874-10174 06
- Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 875-10151 06
- VIDEO COMMUNICATION**
- Scanning technique for tracking small eye-movements
ARC-10488 872-10220 05
- Television noise-reduction device
JSC-12607 873-10431 02

VIDEO DATA

Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02

Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03

A study of the power spectral density of an FM signal
M-FS-21070 B72-10361 02

Digital video display system
NPO-11342 B73-10132 02

Image data rate converter: A concept
NPO-11659 B73-10277 02

Digital slope-threshold data compressor
NPO-11630 B73-10355 02

Data compression by a decreasing slope-threshold test
NPO-10769 B73-10382 02

Real-time video correlator
M-FS-23200 B75-10265 02

VIDEO EQUIPMENT

Radio frequency baseband recording technique
HQ-10317 B70-10069 02

A 225 MHz FM oscillator with response to 10 MHz
M-FS-14977 B70-10179 01

Stellar spectrum classifier
MSC-13450 B70-10319 03

Television multiplexing system
KSC-10654 B71-10391 02

Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02

Video information system
M-FS-21711 B72-10267 09

Optical device for producing color line scan display from monochrome oscilloscope traces
LANGLEY-10896 B72-10375 03

Video enhancement of X-ray and neutron radiographs
LEWIS-11944 B73-10009 03

Digital TV image enhancement system
GSFC-11256 B73-10285 02

Numerical interactive controller
NPO-11497 B73-10294 02

Graphics shadowing analysis
M-FS-21406 B74-10040 09

Recorder/processor apparatus
GSFC-11553 B74-10042 03

Field-sequential stereo television
MSC-12616 B74-10223 03

Automatically-focusing microscope system for live tissue observation
NPO-13215 B75-10048 03

Video switcher for coupling video cameras to single TV monitor
KSC-10782 B75-10192 02

VIDICONS

Neutron-image intensifier
ARG-10249 B70-10240 03

Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02

Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03

Projections of scan patterns on human retina
ARC-10181 B72-10193 05

Solid state television camera has no imaging tube
M-FS-21553 B72-10254 02

Video information system
M-FS-21711 B72-10267 09

Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02

Neutron radiographic viewing system
M-FS-22024 B72-10468 02

VIEW EFFECTS

Radiation view factor program
M-FS-21075 B71-10106 09

VIEWING

Optical discriminator system
LANGLEY-11580 B74-10139 03

Field-sequential stereo television
MSC-12616 B74-10223 03

Viewfinder/tracking system for Skylab
MSC-14407 B75-10040 03

VIKING MARS PROGRAM

Evaluation of thermal insulation materials
NPO-11586 B73-10020 04

VINYL POLYMERS

Use of nonwetttable membranes for water transfer
LANGLEY-10743 B70-10235 04

Inexpensive, removable coating for plaster tooling
MSC-15819 B70-10666 04

VIRTUAL PROPERTIES

Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03

VIRUSES

Elimination of gases and contamination from water
KSC-10502 B70-10456 05

VISCOELASTICITY

Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 B71-10297 04

Viscoelastic cushion for patient support
MSC-12447 B71-10316 05

Structural analysis of viscoelastic materials under thermal and pressure loading
NPO-11727 B73-10301 09

VISCOMETERS

Cryogenic gel flow viscometer
ARC-10523 B72-10180 03

Parallel-plate viscometer
NPO-11387 B72-10700 03

VISCOPLASTICITY

New compression molding process of thermosetting plastic compounds
LANGLEY-10782 B72-10356 08

VISCOSITY

Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04

Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07

Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06

High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08

Readily fiberizable glasses having a high modulus of elasticity
HQ-10593 B70-10432 04

Modifications to a vacuum assisted filtering device to minimize contamination
MSC-13733 B71-10277 04

Viscoelastic cushion for patient support
MSC-12447 B71-10316 05

Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04

Laser beam deflection control: A concept
MSC-13814 B72-10411 02

VISCOUS FLOW

Cryogenic gel flow viscometer
ARC-10523 B72-10180 03

Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04

VISCOUS FLUIDS

Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07

Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03

Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04

Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06

VISION

Automatic optometer operates with infrared test pattern
ARC-10095 B70-10401 05

VISORS

Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04

VISUAL AIDS

Ambient-light-absorbing screen for front projection
ERC-90017 B70-10472 03

Orbit, reentry, and landing attachment for globes
LANGLEY-10626 B70-10656 03

Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01

Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02

Virtual-image display system for flight simulators
ARC-10175 B71-10427 03

RF antenna-pattern visual aids for field use
KSC-10821 B73-10426 02

Three-dimensional models aid visualization of engineering drawings
NPO-13394 B75-10179 08

VISUAL DISCRIMINATION

Improved measurement of depth perception
M-FS-14133 B72-10730 05

VISUAL FIELDS

Visual sensitivity tester
ARC-10329 B72-10203 05

VISUAL OBSERVATION

Improved optical filters for automated visual inspection
HQ-10720 B72-10521 03

Flight tests of vortex-attenuating splines
LANGLEY-11645 B74-10187 03

VISUAL PERCEPTION

Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 B70-10568 05

Eye point-of-regard system
ARC-10360 B71-10476 05

Visual sensitivity tester
ARC-10329 B72-10203 05

VISUAL STIMULI

New reaction tester accurate within 56
microseconds
MSC-13604 B72-10031 05
Visual sensitivity tester
ARC-10329 B72-10203 05

VITAMINS

Metabolic balance analysis program
M-FS-21237 B71-10384 09

VITREOUS MATERIALS

Ceramic backup ring prevents undesirable
weld-metal buildup
NUC-10357 B71-10117 08
Preparation of homogeneous vitreous
materials for electronic and optical
devices
HQ-10670 B71-10172 04
Artificial limb connection
KSC-10833 B74-10183 05

VOICE COMMUNICATION

Audio signal processor
MSC-12223 B70-10180 01
Self-contained miniature electronics
transceiver provides voice communication
in hazardous environment
KSC-10164 B70-10335 01
Frequency-to-amplitude converter: A
concept
MSC-12395 B72-10729 01
A closed, digital telephone system
JSC-13912 B73-10226 02
Real-time speech analyzer
NPO-13465 B75-10205 02

VOICE DATA PROCESSING

Speech therapy and voice recognition
instrument
HQ-10628 B72-10652 05

VOIDS

Sonic impedance technique detects flaws
in polyurethane foam spray-on insulation
M-FS-20561 B70-10012 06
Ultrasonics used for high-precision
nondestructive inspection of brazed joints
NUC-10352 B71-10045 08

VOLATILITY

Alloy vapor deposition using ion plating
and flash evaporation
LEWIS-11262 B71-10199 08
Devolatilization of polymer resins
GSFC-11358 B72-10280 04

VOLT-AMPERE CHARACTERISTICS

High current compensation network for
dc logarithmic amplifiers
NUC-10148 B71-10128 01
Coaxial inverted geometry epitaxial
transistor
ARC-10330 B72-10056 01
Performance of silicon solar cell
assemblies
NPO-11847 B72-10186 01

VOLTAGE AMPLIFIERS

Active resistance capacitance filter
design
ARC-10020 B70-10034 01
Multiloop distributed RC active
networks
ARC-10200 B71-10177 01
Wide-range logarithmic radiometer for
measuring high temperatures
ARC-10254 B71-10498 01
Improved device measures performance
of batteries under load
APC-10252 B72-10051 02
Precision voltage regulator
NPO-11502 B72-10092 01

VOLTAGE GENERATORS

Thermionic triode generates ac power
ERC-10284 B70-10499 01
Lightweight, broad-band spectrum
analyzer
ARC-10405 B72-10060 01

VOLTAGE REGULATORS

Buck-boost dc voltage regulator
GSFC-10735 B70-10005 01
Constant-voltage drive current-steering
switch
NPO-10743 B70-10046 01
Constant current source for converting
absolute temperatures to analog voltages
NPO-10733 B70-10164 02
Voltage regulator with multiple parallel
power source sections
GSFC-10891 B70-10195 02
Two terminal current limiter
NPO-11350 B70-10232 01
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
A transformer of closely spaced pulsed
waveforms
LEWIS-11045 B70-10351 01
Transistor current and voltage limiting
switch
NPO-11166 B70-10414 01
Efficient/reliable dc-to-dc inverter
circuit
XGS-06226 B70-10425 01
Saturable-reactor motor starter reduces
line voltage fluctuations
M-FS-18921 B71-10013 01
Dual-channel circuit conditions/amplifies
transducers' inputs and outputs
MSC-15712 B71-10069 01
High voltage lightning grounding device
LEWIS-11282 B71-10136 01
Small size transformer provides high
power regulation with low ripple and
maximum control
M-FS-16709 B71-10193 01
Multichannel intercom with simultaneous
send/receive capability
M-FS-18808 B71-10228 02
Double phase-lock loop with rapid
transient response - A concept
GSFC-10864 B71-10349 01
Voltage regulator dissipates minimal
power and functions as a voltage divider
B71-10367 01
Externally programmed variable timer
M-FS-20776 B71-10437 04
Precision voltage regulator
NPO-11502 B72-10092 01
Impulse commutating circuit with
transformer to limit reapplied voltage
LEWIS-11849 B73-10004 01
Integrated p-channel MOS gyrator
M-FS-22343 B73-10217 02
Versatile, analog-to-digital,
power-regulator controller
NPO-13178 B73-10467 02
Self-protecting solid state isolated
switch
LEWIS-12268 B74-10069 01
Improved control for nuclear/thermionic
power source: A concept
NPO-13114 B74-10167 03
Zener-regulated solar array/battery
power system
M-FS-23195 B75-10162 02
Nongassing NiCd battery cell
NPO-11853 B75-10174 04

VOLTMETERS

Electrodynamical induction flowmeter
HQ-10230 B70-10024 01
High-frequency wattage-to-voltage
converter
LEWIS-10822 B70-10049 01
Graphical method to predict the dynamic
response of FM receivers
KSC-10111 B70-10119 01
Regulated-current dc power supply for
gaseous-discharge lamps
GSFC-10293 B70-10239 02
Motor brush wear measured with strain
gages
GSFC-10886 B70-10266 01
Hall effect transducer gives electrical
output proportional to meter shaft
rotation
LANGLEY-10620 B70-10298 01
Simple, accurate temperature-measuring
instrument
MSC-12327 B70-10303 01
Inexpensive automatic ranging for digital
voltmeters and frequency counters
NUC-10240 B70-10530 01
Integrator for on-line measurement of
buffer signals
LANGLEY-10627 B70-10639 02
Metal alloy resistivity measurements at
very low temperatures
NUC-10557 B71-10104 04
Electronic ripple indicator
KSC-10162 B71-10170 01
Determination of nonlinear resistance
voltage-current relationships by measuring
harmonics
M-FS-20402 B71-10182 01
Programmed multiplexing system
simultaneously monitors several voltages
MSC-17139 B71-10517 02
Improved device measures performance
of batteries under load
ARC-10252 B72-10051 02
A continuous physiological data
collector
M-FS-20835 B72-10402 05
Electromagnetic rheometer
ARC-10525 B72-10416 04
Reliable low-cost battery voltage
indicator for light aircraft and automobiles
LEWIS-12020 B73-10249 01
Voltage monitoring system
KSC-10736 B75-10154 02
Simple temperature sensor with direct
readout
LANGLEY-11818 B75-10260 01

VOLUME
Uniform data system standardizes
technical computations and the purchasing
of commercially important gases
NUC-10549 B70-10333 04
Volume-checking tool
KSC-10514 B70-10502 07
Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
CSM programs SM RCS propellant
quantity gaging systems program
MSC-17308 B71-10130 09
Variable-volume atomic storage vessel
for hydrogen masers
GSFC-11895 B75-10248 03

VOLUMETRIC ANALYSIS
Volume measuring system
MSC-13972 B74-10271 03

VORTEX GENERATORS
Integrated monopropellant thruster
NPO-12004 B72-10502 06

SUBJECT INDEX

VORTICES

Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 870-10668 07

Wind tunnel investigations at transonic Mach numbers
M-FS-20895 871-10254 06

Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 871-10360 02

Investigations of a turbulent jet in a crossflow
LEWIS-11680 872-10437 06

Flight tests of vortex-attenuating splines
LANGLEY-11645 874-10187 03

Study of fluid flow by charged particles
ARC-10925 875-10028 03

Coaxial, self-aligning optical scanning system
LANGLEY-11711 875-10034 03

VORTICITY

Comparison of aerodynamic noise from three nose-cylinder combinations
M-FS-20816 870-10690 03

VULCANIZED ELASTOMERS

Polymerization of perfluorobutadiene at near-ambient conditions
NPO-10447 871-10291 04

Method for casting polyethylene pipe
ARC-10706 873-10032 08

VULCANIZING

Use of acrylic sheet molds for elastomeric products
MSC-15636 870-10019 08

Effects of the thermal sterilization procedure on polymeric products
NPO-11688 871-10362 04

W

WAFERS

Laser scribing of silicon wafers
ERC-10386 870-10437 01

Growth of single-crystal gallium nitride
ERC-10301 870-10473 03

Concept for a distributed processor computer
ERC-10271 870-10481 02

Radial heat flux transformer
NPO-10828 871-10311 03

Shielding method for polycrystalline and epitaxy growths
M-FS-20162 871-10434 04

Lightweight, broad-band spectrum analyzer
ARC-10405 872-10060 01

Inorganic glass ceramic slip rings
M-FS-20711 872-10313 04

Bubble-domain circuit wafer evaluation coil set
LANGLEY-11728 875-10197 01

WAKES

Variables in turbine erosion
M-FS-18677 870-10325 03

WALKING

Zero-g simulation system for therapeutic application
M-FS-14671 871-10034 04

Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 875-10148 05

WALL PRESSURE

Digital program analyzes supersonic flow field within bell-shaped rocket nozzles
M-FS-14292 870-10597 09

Airflow distribution control for improved turbine engine performance
LEWIS-11593 872-10178 07

WALL TEMPERATURE

A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 870-10575 03

Design and evaluation of convectively cooled nozzles
LEWIS-10894 871-10508 09

Main tank injection pressurization program
LEWIS-11368 872-10069 09

Turbulent mixing film cooling correlation
LEWIS-11417 872-10326 07

Fabrication of cooled, graphite-lined structures
LEWIS-11741 872-10593 08

WALLS

Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 870-10388 06

Hydrogen maser - Measurement of wall shift with a flexible bulb
HQ-10552 870-10441 03

Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 870-10632 03

Wall attachment, fluoric crossover "AND" gate
XLA-07391 871-10178 07

Strong, easy-to-mold, spiral buttress thread
LANGLEY-10755 871-10336 08

Analysis and design of a flat central finned-tube radiator
LEWIS-10893 871-10399 09

Foldable patterns form construction blocks
MSC-13860 871-10523 08

A method of eliminating hydrogen maser wall shift
HQ-10663 872-10670 03

WARNING SYSTEMS

Laser-Doppler gas velocimeter
M-FS-20583 870-10143 02

Intruder detection system
ARC-10097 870-10638 02

Constant current load matches impedances of electronic components
GSFC-10982 870-10643 01

Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 870-10680 03

Wein bridge oscillator circuit
MSC-13686 871-10089 01

Sensitive gaseous hydrogen detection system
M-FS-21161 871-10209 04

Portable circuit-interruption indicator
KSC-10546 871-10246 02

Communications system for zero-g simulation tests in water
M-FS-21357 871-10344 02

Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 871-10360 02

Peak acceleration limiter
NPO-10556 872-10007 01

Tornado detector and alarm
M-FS-20915 872-10106 01

WASTE UTILIZATION

A closed loop cryogenic environment pressure regulating system
MSC-13880 872-10390 02

Airlock caution and warning system
M-FS-21576 872-10467 02

A system for early warning of bearing failure
M-FS-21877 872-10494 06

An absentee monitoring device
KSC-10668 872-10578 01

Brake wear warning device: A concept
JSC-19157 873-10123 02

Intensive care alarm system
GSFC-11377 873-10126 02

Detector for inspection of fire alarms
GSFC-11600 873-10128 06

Combustion products generating and metering device
GSFC-11095 874-10036 04

Fail-safe fire detection system
LEWIS-12238 874-10078 02

Pocket-size microwave radiation hazard detector
NPO-11461 874-10097 02

Short-range laser obstacle detector
NPO-11856 874-10101 03

G-load indicator and warning device for aircraft
ARC-10806 874-10171 02

Time-of-arrival lightning activity location system
KSC-11006 875-10297 02

WARPAGE

Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 871-10247 08

WASHERS (SPACERS)

Joint preload properties of structural threaded fasteners
M-FS-21453 871-10531 08

Piezoelectric actuator uses sequentially-excited multiple elements: A concept
NPO-11527 872-10096 01

WASPALLOY

Molding procedure for casting a variety of alloys
ARC-10358 870-10512 08

WASTE DISPOSAL

Device prepares aluminum surfaces for welding
M-FS-20750 871-10214 07

Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 871-10343 03

Metabolic balance analysis program
M-FS-21237 871-10384 09

Metered oxygen supply aids treatment of domestic sewage
ARC-10024 872-10557 05

Design for waste-management system
JSC-14486 873-10428 05

Environmental control and waste management system design concept
LANGLEY-11588 874-10235 06

Processing for obtaining good quality water from sewage
NPO-13224 875-10113 04

WASTE UTILIZATION

Insolubilization process increases enzyme stability
ARC-10314 871-10443 04

Design for waste-management system
JSC-14486 873-10428 05

WATER

Improved apparatus for continuous culture of hydrogen-fixing bacteria
 HQ-09000 870-10001 05
 Quantitative conversion of water to carbon dioxide
 NPO-10731 870-10013 04
 Use of nonwetttable membranes for water transfer
 LANGLEY-10743 870-10235 04
 Novel wave generator adaptable to indoor surfing
 LEWIS-11096 870-10563 03
 The water-cryogen heat exchanger
 NUC-11029 870-10591 03
 Crystal growing by electrodeposition from dense gaseous solutions
 NPO-10440 870-10676 04
 Performance map of a heat pipe charged with ammonia
 NPO-11454 870-10726 03
 Rapid analytical determination of glutaraldehyde concentrations
 ARG-10413 871-10047 05
 Miniature fuel cells relieve gas pressure in sealed batteries
 XGS-11370 871-10064 02
 Updated, expanded, fluid properties handbook
 M-FS-21169 871-10078 04
 Improved method of using paraformaldehyde as a disinfectant
 MSC-15887 871-10096 05
 Ultrasonic metal etching for metallographic analysis
 LEWIS-11230 871-10099 04
 Inexpensive anti-fog coating for windows
 MSC-13530 871-10149 04
 Erosion of metals by multiple impacts with water
 HQ-10591 871-10197 04
 Water electrolysis module
 ARC-10246 871-10203 03
 Improved method for calculating pump thermodynamic suppression head
 M-FS-20852 871-10239 07
 Modification of physical properties of freeze-dried rice
 MSC-13540 871-10259 04
 Survey of heat transfer to near critical fluids
 LEWIS-11289 871-10262 03
 Durable cathodes for high-power inert-gas arcs
 LEWIS-11162 871-10264 03
 Hot tap thermowell installation
 MSC-12427 871-10302 07
 New method speeds body inert gas saturation and utilizes surface decompression
 MSC-13543 871-10330 05
 Solvation agent for disulfide precipitates from inhibited glycol-water solutions
 MSC-13695 871-10331 04
 Communications system for zero-g simulation tests in water
 M-FS-21357 871-10344 02
 Metabolic balance analysis program
 M-FS-21237 871-10384 09
 Effect of thermal discharges on the mass energy balance of Lake Michigan
 AEC-10013 872-10004 03
 Restartable heat pipe
 ARC-10198 872-10188 03

Noncontaminating technique for making holes in existing process systems
 LEWIS-11595 872-10385 07
 Solid amine compounds as sorbents for carbon dioxide: A concept
 ARC-10571 872-10421 04
 Flexible shielding system for radiation protection
 LRL-10028 872-10500 03
 Carbon dioxide concentration indicator
 HQ-10582 872-10526 05
 Preparation of stable colloidal dispersions in fluorinated liquids
 HQ-10580 872-10529 04
 Computer program for calculating water and steam properties
 LEWIS-12206 874-10123 09
 Computer program for calculating water and steam properties
 LEWIS-12519 875-10187 09

WATER BALANCE

The deterioration of intermediate moisture foods
 MSC-13827 871-10332 05

WATER FLOW

Elimination of gases and contamination from water
 KSC-10502 870-10456 05
 Water velocity meter
 LANGLEY-10619 870-10662 02
 Automatic water inventory, collecting, and dispensing unit
 LANGLEY-11071 872-10663 06
 Experimental study of flow distribution with circumferential manifolds
 LEWIS-11649 872-10738 06
 Electro-chemical grinding
 LANGLEY-10801 872-10744 08

WATER HAMMER

Erosion of metals by multiple impacts with water
 HQ-10591 871-10197 04

WATER LANDING

Water impact loads
 M-FS-21955 872-10621 09
 The impact of water on free-falling bodies
 M-FS-23310 875-10311 03

WATER LOSS

Method to determine vented electrochemical cell quality
 GSFC-11216 872-10396 04

WATER MANAGEMENT

Systems management techniques and problems
 M-FS-21401 871-10361 01
 Design of a unit to produce hot distilled water for the same power consumption as a water heater
 JSC-14224 873-10402 04
 Design for waste-management system
 JSC-14486 873-10428 05
 Color-coded area sensitivity maps of photomultipliers
 LANGLEY-10320 874-10259 01

WATER POLLUTION

Simple chamber facilitates chemiluminescent detection of bacteria
 LANGLEY-10705 870-10525 05
 Reliability Analysis Model
 M-FS-14513 870-10614 09
 Systems approach provides management control of complex programs
 M-FS-20791 870-10647 06
 Analytical methods for bacterial kinetics studies
 LRL-10011 871-10192 05

Effect of thermal discharges on the mass energy balance of Lake Michigan
 AEC-10013 872-10004 03

A method of isolating organic compounds present in water
 AEC-10010 872-10044 04

Water purification by reverse osmosis using heterocyclic polymer membranes
 LANGLEY-10514 872-10230 04

Assessment of water pollution by airborne measurement of chlorophyll
 ARC-10648 872-10566 04

Technical management techniques for identification and control of industrial safety and pollution hazards
 M-FS-21883 872-10588 05

Optical detection of oil on water
 ARC-10649 873-10268 03

An automated remote marshland water-sampling station
 LANGLEY-11503 873-10437 04

Polymers used to absorb fats and oils: A concept
 NPO-11609 874-10210 05

Color-coded area sensitivity maps of photomultipliers
 LANGLEY-10320 874-10259 01

Miniature sonar fish tag
 LANGLEY-11814 875-10092 02

WATER PRESSURE

Gage for measuring coastal erosion and sedimentation
 LANGLEY-10779 870-10629 01

New method speeds body inert gas saturation and utilizes surface decompression
 MSC-13543 871-10330 05

Weight simulator
 ARC-10100 872-10046 05

Low-cost, portable fire hose tester
 LEWIS-12365 875-10003 06

WATER QUALITY

Automated monitoring of recovered water quality
 LANGLEY-11203 874-10029 05

WATER RECLAMATION

Hydrogen eliminator
 ARC-10408 872-10208 03

Design of a unit to produce hot distilled water for the same power consumption as a water heater
 JSC-14224 873-10402 04

Design for waste-management system
 JSC-14486 873-10428 05

Automated monitoring of recovered water quality
 LANGLEY-11203 874-10029 05

Domestic wash water reclamation
 LANGLEY-11606 874-10177 04

Continuous detection of viable micro-organisms by chemiluminescence
 MSC-10170 875-10170 05

WATER TEMPERATURE

Effect of thermal discharges on the mass energy balance of Lake Michigan
 AEC-10013 872-10004 03

WATER TREATMENT

Analytical methods for bacterial kinetics studies
 LRL-10011 871-10192 05

A silver ion water sterilization system
 MSC-15734 871-10278 04

A method of isolating organic compounds present in water
 AEC-10010 872-10044 04

Water purification by reverse osmosis using heterocyclic polymer membranes
 LANGLEY-10514 B72-10230 04

Purification of contaminated water by filtration through porous glass
 ARC-10655 B72-10412 04

Application of biological filters in water treatment systems
 JSC-14226 B73-10404 05

Iodine generator for disinfecting reclaimed water
 MSC-14632 B74-10153 05

Polyelectrolytes with high charge density
 NPO-11918 B74-10159 04

Processing for obtaining good quality water from sewage
 NPO-13224 B75-10113 04

WATER VAPOR

Water-filled heat pipe useful at moderate temperatures
 M-FS-20543 B70-10106 03

Film breakers prevent migration of aqueous potassium hydroxide in fuel cells
 MSC-13174 B70-10277 01

Intumescent coatings as fire retardants
 ARC-10099 B70-10450 04

Condensation of wet vapors in turbines
 NPO-10773 B70-10613 09

Atmospheric pollution measurement by optical cross correlation methods - A concept
 M-FS-12078 B71-10224 02

Electrolysis cell functions as water vapor dehumidifier and oxygen generator
 ARC-10316 B71-10231 01

Metabolic breath analyzer
 M-FS-21415 B71-10466 05

Boiler for generating high quality vapor
 LEWIS-11345 B72-10135 06

Cell for electrolysis of water vapor
 ARC-10521 B72-10166 03

Solid amine compounds as sorbents for carbon dioxide: A concept
 ARC-10571 B72-10421 04

Fluidic device for measuring constituent masses of a flowing binary gas mixture
 LEWIS-11995 B73-10230 06

WATER VEHICLES

Wireless telemetry system for floating bodies
 KSC-10855 B74-10028 06

WATER WAVES

Novel wave generator adaptable to indoor surfing
 LEWIS-11096 B70-10563 03

Application of monochromatic ocean wave forecasts to prediction of wave-induced currents
 LANGLEY-11809 B75-10226 03

The impact of water on free-falling bodies
 M-FS-23310 B75-10311 03

WATERPROOFING

Foldable patterns form construction blocks
 MSC-13860 B71-10523 08

Watertight low-cost electrical connector
 LEWIS-11552 B72-10506 01

WATTMETERS

High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01

Wideband wattmeter for instant measurement of real power
 LEWIS-11698 B72-10737 01

Inexpensive pocket-size solar energy meter (insolometer)
 LEWIS-12598 B75-10283 01

WAVE ATTENUATION

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
 ERC-10463 B70-10269 03

WAVE DIFFRACTION

Vibration detection using lasers
 ARC-10389 B71-10145 03

Acousto-optic filter for electronic laser tuning
 HQ-10715 B72-10520 03

WAVE DISPERSION

Ray tracing program with options for diffraction gratings
 GSFC-11305 B71-10294 09

Holographic direct-vision spectroscopy
 LANGLEY-11750 B75-10090 03

WAVE EQUATIONS

General technique for measurement of refractive index variations
 HQ-10359 B70-10064 01

Analysis and computer programs to calculate acoustic wave properties of baffled chambers
 LEWIS-11529 B72-10577 09

WAVE GENERATION

Sinusoidal-pressure generator for testing dynamic pressure probes
 LEWIS-11094 B70-10352 06

Novel wave generator adaptable to indoor surfing
 LEWIS-11096 B70-10563 03

Triangular-wave generator with controlled sweep polarity
 ARC-10332 B71-10166 03

Low-frequency triangular wave generator
 ARC-10259 B71-10469 01

WAVE PROPAGATION

General technique for measurement of refractive index variations
 HQ-10359 B70-10064 01

High amplitude sinusoidal pressure generator
 LEWIS-11241 B70-10635 07

Traveling-wave photodetector has sub-nanosecond response
 GSFC-10831 B70-10641 02

Resonant systems for dynamic evaluation of pressure transducers
 HQ-10609 B70-10692 07

Low-frequency triangular wave generator
 ARC-10259 B71-10469 01

Improvements of Zeyded method for calculating flutter of flat panels
 M-FS-20955 B72-10399 06

Zeros of certain cross products of Bessel functions of fractional order
 LEWIS-12221 B74-10012 03

WAVE REFLECTION

Redirecting electromagnetic beams through wide angles
 ARC-10602 B72-10307 03

Reflected-wave maser
 NPO-13490 B75-10279 03

WAVE SCATTERING

Non-symmetrical two dimensional scattering program
 NPO-11576 B71-10007 09

Symmetrical two dimensional scattering program
 NPO-11578 B71-10008 09

High-energy lasers by using distributed reflection: A concept
 NPO-13346 B75-10118 03

WAVEFORMS

Buck-boost dc voltage regulator
 GSFC-10735 B70-10005 01

Solid state switch provides high input-to-output isolation
 HQ-10488 B70-10022 01

High-resolution spectral analysis
 NPO-10748 B70-10039 01

High-frequency wattage-to-voltage converter
 LEWIS-10822 B70-10049 01

Ranging code processor
 NPO-10066 B70-10060 02

General technique for measurement of refractive index variations
 HQ-10359 B70-10064 01

Solenoid valve performance characteristics studied
 M-FS-12458 B70-10066 07

Solid-state ac-to-dc converter
 HQ-10545 B70-10147 02

A 225 MHz FM oscillator with response to 10 MHz
 M-FS-14977 B70-10179 01

Constant-amplitude RC oscillator
 ARC-10262 B70-10338 01

A transformer of closely spaced pulsed waveforms
 LEWIS-11045 B70-10351 01

Biomedical sensing and display concept improves brain wave monitoring
 ERC-10233 B70-10447 05

Wide-range tracking oscillator generates phase and frequency coherent output
 M-FS-14518 B70-10451 02

Technique for analyzing human respiratory process
 MSC-13436 B70-10528 05

Digital input is buffered to real-time analog display
 KSC-10397 B70-10562 01

High-accuracy detector for laser radar
 MSC-13275 B70-10570 01

Man-machine interactive system simplifies computer-aided circuit design
 LANGLEY-10711 B70-10660 09

Electronic device increases threshold sensitivity and removes noise from FM communications receiver
 MSC-12165 B71-10091 02

Saturation current spikes eliminated in saturable core transformers
 ERC-10125 B71-10142 01

A frequency division multiplex technique for transmitting commands
 KSC-10521 B71-10169 02

Voltage-controlled oscillator
 ARC-10078 B71-10171 01

Catheter transducer and circuit
 ARC-10132 B71-10234 01

A real-time statistical time-series analyzer
 MSC-12428 B71-10276 02

Isosceles detector provides maximum resolution in expanded range
 GSFC-10932 B71-10279 01

Phase locking of field sequential color wheel for small TV camera
 MSC-13857 B71-10326 02

High efficiency telemetry method
 NPO-10388 B71-10371 02

Waveshaping electronic circuit
 M-FS-14916 B71-10429 01

- Low-frequency triangular wave generator
ARC-10259 B71-10469 01
Statistical measurements of the zero-crossing time of a noisy sinewave
GSFC-11004 B71-10502 02
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
Heart simulator
M-FS-21609 B72-10131 02
Ear oximeter-transducer monitors four physiological responses
XAC-05422 B72-10224 05
Electronic switching circuit uses complementary non-linear components
AEC-10060 B72-10236 01
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
Roll function in a flight simulator
ARC-10557 B72-10417 02
Electronic circuit detects left ventricular ejection events in cardiovascular system
LEWIS-11581 B72-10512 05
Oscillation of laser-beam intensity as observed with beam splitters
ARC-10694 B72-10572 03
Speech therapy and voice recognition instrument
HQ-10628 B72-10652 05
Simulated breath waveform control
HQ-10779 B72-10661 05
Wideband wattmeter for instant measurement of real power
LEWIS-11698 B72-10737 01
Acoustical analysis system
GSFC-11087 B72-10751 02
Automatic method of measuring silicon-controlled-rectifier holding current
LEWIS-11898 B72-10752 02
Operational slope-limiting circuit
NPO-11773 B73-10346 01
All-digital phase-lock loops for noise-free signals
NPO-11914 B73-10350 01
Wide deviation phase modulator
LANGLEY-11607 B74-10178 02
Fourier waveform analyzer
GSFC-11747 B75-10070 01
Computer program for analysis of vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
- WAVEGUIDE TUNERS**
Quasi-optical equivalent of waveguide slide screw tuner
ERC-10312 B70-10384 01
- WAVEGUIDE WINDOWS**
The thin film microwave iris
LANGLEY-10511 B72-10548 02
- WAVEGUIDES**
Radiometric evaluation of antenna-feed component losses
NPO-11238 B70-10344 02
Directional coupler for optical waveguides
ERC-10094 B70-10381 03
Quasi-optical equivalent of waveguide slide screw tuner
ERC-10312 B70-10384 01
Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01
Microwave cryogenic thermal-noise standards
NPO-11424 B71-10139 03
- Waveguide switch protector
NPO-11592 B72-10705 01
Extended range harmonic filter
LEWIS-12064 B73-10313 02
Microwave holography for nondestructive testing
ARC-10774 B73-10379 03
Combined diplexer and harmonic filter
LEWIS-12059 B73-10410 02
Dual-band ridged waveguide
LANGLEY-11781 B75-10091 01
Transmitter switch for high-power microwave output
NPO-13439 B75-10122 02
- WAVELENGTHS**
Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02
Laser wavelength selector and output coupler
ERC-10248 B70-10507 02
Dual-wavelength system monitors deposition of films - A concept
M-FS-20675 B70-10658 03
Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
Beam squint correction for a diplex, retrodirective phased array
GSFC-11023 B71-10444 02
Improving laser beam coherence - A concept
ARC-10417 B71-10527 03
Projections of scan patterns on human retina
ARC-10181 B72-10193 05
Nondispersive infrared analyzer for specific gases in complex mixtures
ARC-10308 B72-10198 03
A dual-beam actinic light source for photosynthesis research
ARC-10351 B72-10205 05
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
A compact spectroradiometer for solar simulator measurements
HQ-10683 B72-10327 03
Frequency-wavelength calculator with table of dielectric properties
GSFC-11200 B72-10472 03
Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03
Measurement of electron density and temperature in plasmas
ARC-10598 B72-10563 03
Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04
Spectrometer
GSFC-11694 B74-10181 03
- WAXES**
An electrothermally actuated micro valve
NPO-10730 B70-10171 07
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05
Laser addressed holographic memory system
M-FS-22565 B73-10155 03
- An improved holographic recording medium
M-FS-22532 B73-10166 09
- WEAPON SYSTEM MANAGEMENT**
Systems management techniques and problems
M-FS-21401 B71-10361 01
- WEAR**
Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
Friction characteristics of graphite and graphite-metal combinations at various temperatures
NUC-10151 B70-10467 04
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 B70-10653 07
Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
Chatter-free check valve - A concept
MSC-13262 B71-10067 07
Predicting service life margins
M-FS-24015 B71-10194 06
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
- WEAR INHIBITORS**
Low-temperature radiation-resistant material for ball-bearing retainers
NUC-10058 B70-10576 04
Improved geneva mechanism
LANGLEY-11443 B74-10030 06
- WEAR TESTS**
Commutating brushes tested in dc motors in dry argon atmospheres
ARG-10243 B70-10045 01
Polyimide bonded graphite fluoride: A new long life solid lubricant coating
LEWIS-11864 B72-10628 04
Scanning-electron-microscope used in real-time study of friction and wear
LEWIS-12448 B75-10064 06
- WEATHER FORECASTING**
Reliability Analysis Model
M-FS-14513 B70-10614 09
Tornado detector and alarm
M-FS-20915 B72-10106 01
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09
Application of monochromatic ocean wave forecasts to prediction of wave-induced currents
LANGLEY-11809 B75-10226 03
- WEATHER STATIONS**
A pseudo random-access synchronous meteorological satellite system
GSFC-10895 B71-10220 02
Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03
- WEATHERING**
Nonflammable organic-base paint for oxygen-rich atmospheres
M-FS-20486 B71-10077 04
- WEATHERPROOFING**
Economical weatherproof helical antenna
XKS-08485 B70-10016 01

WEAVING

- Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04
Nonflammable and abrasion resistant coating process for glass fibers
MSC-14024 B72-10445 08

WEDGE FLOW

- Computing incompressible laminar and turbulent boundary layer formation
LEWIS-11190 B71-10155 09

WEDGES

- An improved apochromatic wedge utilizing optical molecular contact bonding
GSFC-11082 B72-10388 03

WEIBULL DENSITY FUNCTIONS

- Peak structural response to nonstationary random excitations
NPO-11617 B71-10188 06
Table for estimating parameters of Weibull distribution
M-FS-18817 B71-10436 03

WEIGHT

- Speed enhancement of complementary MOS devices
ARC-10387 B72-10184 01

WEIGHT (MASS)

- Drilled ball bearings - An approach to extending bearing fatigue life at high speeds
LEWIS-10856 B70-10468 07
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
Lightweight S-band helix antenna
KSC-10392 B70-10538 02
The low-cost cryostat
NUC-11034 B70-10592 03
Efficient pressure-transformer for fluids
M-FS-20830 B70-10595 07
Lightweight, self-evacuated insulation panels
LEWIS-90361 B70-10646 03
Development of superconductive magnets
LEWIS-11170 B70-10678 03
CSM programs SM RCS propellant quantity gaging systems program
MSC-17308 B71-10130 09
Accumulative weights program
M-FS-15066 B71-10181 09
High-volume pressure relief valve
KSC-10707 B72-10536 07
Comparative performance of double-focus and quadrupole mass spectrometers
NPO-11689 B72-10702 03
Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06
Inexpensive lightweight mirror
MSC-14615 B74-10155 05
Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06
- WEIGHT INDICATORS**
Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05

- Remote weighing device
M-FS-21556 B72-10325 07
Method to determine vented electrochemical cell quality
GSFC-11216 B72-10396 04
Variable load indicator
M-FS-21728 B73-10335 07

WEIGHT MEASUREMENT

- Optimizing insulation weight on cryogenic storage tanks
KSC-10399 B70-10102 03
Remote weighing device
M-FS-21556 B72-10325 07

WEIGHTLESSNESS

- Multimode ergometer system
M-FS-21044 B71-10107 05
High mobility work station restraint support
MSC-12419 B71-10301 07
Weight simulator
ARC-10100 B72-10046 05
Time-lapse camera for microscopy
ARC-10423 B72-10125 05
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
Intravenous fluid flow meter concept for zero gravity environment
MSC-14123 B72-10461 05
Restraint and locomotion aid
ARC-10153 B72-10558 06
Reproductive cell separation: A concept
M-FS-22627 B73-10198 05

WEIGHTLESSNESS SIMULATION

- Zero-g simulation system for therapeutic application
M-FS-14671 B71-10034 04
Communications system for zero-g simulation tests in water
M-FS-21357 B71-10344 02

WELD STRENGTH

- Nondestructive assessment of penetration of electron-beam welds
MSC-15955 B70-10466 08
Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04
Method for calculating the stresses in pressure vessels
MSC-13515 B71-10514 06
Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Small-scale explosive welding of aluminum
LANGLEY-10941 B72-10002 04
Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08
Nondestructive testing of microtab welds
ARC-10176 B72-10296 02
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
Joining porous components to solid metal structures
LEWIS-11259 B72-10754 08
- WELD TESTS**
Practical method of diffusion-welding steel plate in air
LEWIS-11387 B71-10455 08
Nondestructive testing of microtab welds
ARC-10176 B72-10296 02

- Acoustic emission used as weld quality monitor
AEC-10018 B72-10427 08
Flaw detection by mechanical resonant measurement
M-FS-19218 B73-10440 03
Grain refinement control in gas-shielded arc welding of aluminum tubing
JSC-19095 B73-10508 08

WELDABILITY

- Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
Thermal treatment and mechanical properties of aluminum-2021
M-FS-20559 B70-10369 04
Tungsten-reinforced tantalum
LEWIS-11750 B72-10684 04

WELDED JOINTS

- Spinarc gas tungsten arc torch holder
MSC-15646 B70-10041 08
Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
Improved electron-beam welding technique
M-FS-20714 B70-10127 08
Improved welding of Rene-41
M-FS-18821 B70-10367 08
Ultrasonic detection of flaws in fusion butt welds
M-FS-20824 B70-10514 08
Repair of brazed steel honeycomb-sandwich panels with vertical pins only
MSC-15831 B70-10624 08
Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08
Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 B71-10168 08
Modular construction provides large volume storage facility in minimum space
M-FS-13568 B71-10354 08
Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 B71-10452 01
Solid state welding of dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08
Bonding titanium to Rene 41 alloy
ARC-10311 B72-10041 08
Nondestructive testing of microtab welds
ARC-10176 B72-10296 02
Portable electron beam weld chamber
MSC-17738 B72-10338 06
Portable beveling tool
M-FS-16863 B72-10678 07
The weld-brazing metal joining process
LANGLEY-11072 B72-10683 08
Reduction of porosity in aluminum weldments
MSC-14198 B72-10734 08

- X-ray opaque additive for inspection of weld joints
M-FS-22896 873-10528 08
- Inhibiting Kirkendall void growth in welded bimetallic structures
LEWIS-11573 875-10006 08
- WELDED STRUCTURES**
- Pipe installation technique avoids disturbing work areas
MSC-15581 871-10093 06
- Nondestructive testing of microtab welds
ARC-10176 872-10296 02
- Analysis of thermal stress and metal movement during welding
M-FS-20984 872-10333 04
- Portable electron beam weld chamber
MSC-17738 872-10338 06
- Joining porous components to solid metal structures
LEWIS-11259 872-10754 08
- WELDING**
- A stabilized low-frequency alternating-current electric arc
LEWIS-10442 870-10065 01
- Rene 41 heat treatment electron microscopy
M-FS-18633 870-10081 04
- Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 870-10084 04
- A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 870-10121 08
- Applications of gap welding
M-FS-20715 870-10155 08
- Vapor feeding of liquid metal cathodes
HQ-10213 870-10168 03
- Reference for radiographic film interpreters
M-FS-16695 870-10189 03
- Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 870-10194 08
- Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 870-10417 08
- Improved burst disk/cutter assembly
KSC-10516 870-10583 07
- Low temperature uses of helium
LEWIS-11171 870-10673 03
- Advances in electrometer vacuum tube design
GSFC-10729 870-10696 01
- Welded polypropylene liners for large descaling tanks
M-FS-18711 871-10012 07
- Parallel-gap welding for joints between copper conductors and Kovar
M-FS-21224 871-10168 08
- Interpretation of aluminum-alloy weld radiography
M-FS-20943 871-10206 08
- Device prepares aluminum surfaces for welding
M-FS-20750 871-10214 07
- Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 871-10268 08
- Weld beveling of large-diameter pipes
KSC-10550 871-10280 08
- Hot tap thermowell installation
MSC-12427 871-10302 07
- Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 871-10394 04
- Precision, triple-parameter, nondestructive-test system for in-process microwelding
ARC-10402 871-10452 01
- Improved molecular sorbent trap for high-vacuum systems
ARC-10056 871-10478 03
- Optimized techniques and requirements for computer improvement of structural weld radiographs
M-FS-21627 871-10492 09
- Joining precipitation-hardened nickel-base alloys by friction welding
LEWIS-11514 872-10288 08
- Noncontaminating technique for making holes in existing process systems
LEWIS-11595 872-10385 07
- Ion plating seals microcracks or porous metal components
LEWIS-11657 872-10397 04
- Compact 20-kiloampere pulse-forming-network capacitor bank
LEWIS-12009 873-10171 01
- Welding high-strength aluminum alloys
M-FS-22918 873-10481 04
- In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 874-10096 04
- Industrial laser welding: An evaluation
M-FS-23237 875-10267 08
- WELDING MACHINES**
- Modified faceplate assembly for stud-welding gun
M-FS-16725 870-10044 08
- Improved sheath removal technique for very small thermocouples
LEWIS-11228 871-10179 01
- Side wire feed for welding apparatus
NPO-13148 874-10214 08
- WETTABILITY**
- Improved welding of Rene-41
M-FS-18821 870-10367 08
- Aluminum-silicon eutectic alloy improves electrical and mechanical contact to silicon carbide
ERC-10277 870-10445 03
- WETTING**
- A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 870-10712 06
- Composite casting demonstration
M-FS-21668 872-10266 04
- WHEATSTONE BRIDGES**
- Simple non-destructive tests for electroexplosive devices
NPO-11563 872-10315 01
- WHEEL BRAKES**
- Brake wear warning device: A concept
JSC-19157 873-10123 02
- Braking action of wheeled vehicles is controlled automatically during minimum-distance stops
LANGLEY-11897 875-10264 06
- WHEELS**
- Phase locking of field sequential color wheel for small TV camera
MSC-13857 871-10326 02
- Tubing cutter
NPO-11524 872-10095 07
- A permeable rotating-wheel solvent extractor
LRL-10033 872-10343 04
- Triangular wheel locomotion mechanism
NPO-11366 872-10714 06
- Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 874-10238 06
- WHISKER COMPOSITES**
- Composite casting demonstration
M-FS-21668 872-10266 04
- WHISKERS (SINGLE CRYSTALS)**
- Biaxial prestressing of brittle materials
M-FS-20272 870-10316 04
- Crystal growing by electrodeposition from dense gaseous solutions
NPO-10440 870-10676 04
- New understanding of fiber composite materials
NPO-11605 871-10161 04
- WHITE BLOOD CELLS**
- Bacterial adenosine triphosphate as a measure of urinary tract infection
GSFC-11092 871-10051 05
- WHITE NOISE**
- Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 871-10273 03
- WICKS**
- The heat pipe - A simple, versatile, efficient heat transfer tool
NPO-11598 871-10109 06
- Literature review and experimental investigation of heat pipes
M-FS-21074 871-10353 03
- Multichamber controllable heat pipe
ARC-10199 871-10526 03
- Restartable heat pipe
ARC-10198 872-10188 03
- Sonic limitations and startup problems of heat pipes
AEC-10036 872-10368 03
- WIDE ANGLE LENSES**
- Wide-field reflective scanning optical systems
JSC-14096 873-10279 03
- WIDEBAND COMMUNICATION**
- Television multiplexing system
KSC-10654 871-10391 02
- High-sensitivity receiver for CO₂ laser communications
GSFC-11455 873-10223 02
- WIENER FILTERING**
- Theory and application of Kalman filtering
M-FS-20491 870-10309 06
- WIND (METEOROLOGY)**
- Wind trajectory tracing for air pollution studies (AIRPOL)
NPO-11892 872-10072 09
- Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 873-10417 03
- WIND DIRECTION**
- Wind trajectory tracing for air pollution studies (AIRPOL)
NPO-11892 872-10072 09
- Program to determine space vehicle response to wind turbulence
M-FS-21614 872-10410 09
- Quartz crystal microbalances to measure wind velocity and air humidity
NPO-13462 875-10124 03
- WIND EFFECTS**
- Remote determination of sea conditions by electromagnetic backscatter measurement
M-FS-13777 871-10027 04

SUBJECT INDEX

Application of monochromatic ocean wave forecasts to prediction of wave-induced currents
 LANGLEY-11809 B75-10226 03

WIND MEASUREMENT

Wind trajectory tracing for air pollution studies (AIRPOL)
 NPO-11892 B72-10072 09

Program to determine space vehicle response to wind turbulence
 M-FS-21614 B72-10410 09

WIND PROFILES

Atmospheric density variations related to internal gravity waves
 M-FS-21637 B72-10143 03

Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
 M-FS-22741 B73-10417 03

WIND SHEAR

Atmospheric density variations related to internal gravity waves
 M-FS-21637 B72-10143 03

Program to determine space vehicle response to wind turbulence
 M-FS-21614 B72-10410 09

Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
 M-FS-22741 B73-10417 03

WIND TUNNEL APPARATUS

A miniature 1/4-inch diameter 24-pin plug and receptacle
 LANGLEY-10607 B70-10249 01

Very low velocity flow sensor uses fluidic techniques
 ERC-10404 B70-10461 03

Long-life electromechanical sine-cosine generator
 LANGLEY-10503 B71-10029 01

Gyro spring augmentation system
 ARC-10496 B72-10010 06

Smoke generator
 LANGLEY-11433 B73-10414 06

WIND TUNNEL MODELS

Reducing streak film data via electronic cross correlator
 M-FS-18804 B70-10365 01

Low temperature ablation models made by pressure/vacuum application
 LANGLEY-10676 B70-10578 04

Comparison of aerodynamic noise from three nose-cylinder combinations
 M-FS-20816 B70-10690 03

Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 B71-10247 08

Pressure-probe assembly for wind tunnels
 ARC-10569 B72-10248 03

Technique for producing wind-tunnel heat-transfer models
 ARC-10658 B72-10349 08

New method for determining thermophysical properties of test specimens
 LANGLEY-11053 B73-10447 04

Automated electronic system for measuring thermophysical properties
 LANGLEY-11883 B75-10160 03

WIND TUNNEL NOZZLES

Continuous-flow variable-density wind tunnel facilities
 NPO-11287 B72-10078 06

WIND TUNNEL STABILITY TESTS

Lift distribution in a rectangular jet
 ARC-10424 B71-10030 09

Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 B71-10247 08

WIND TUNNELS

Controlled release of free-falling test models
 NPO-11314 B70-10077 07

Laser-Doppler gas velocimeter
 M-FS-20583 B70-10143 02

Analysis of surface ablation of noncharring materials
 ARC-10223 B70-10615 09

Resonant systems for dynamic evaluation of pressure transducers
 HQ-10609 B70-10692 07

Laser Doppler instrument measures fluid velocity without reference beam
 XAC-10770 B71-10120 03

Inertia diaphragm pressure transducer
 XAC-2981 B71-10200 05

Device measures conductivity and velocity of ionized gas streams
 XAC-05695 B71-10235 03

Optical probing of supersonic flows with statistical correlation
 M-FS-20642 B71-10252 03

Wind tunnel investigations at transonic Mach numbers
 M-FS-20895 B71-10254 06

Wind tunnel buffet load measuring technique
 ARC-10495 B72-10022 06

Porous surface microphone for measuring acoustic signals in turbulent windstreams
 ARC-10776 B73-10490 03

High-directivity acoustic antenna
 ARC-10789 B74-10050 02

WIND VELOCITY

Very low velocity flow sensor uses fluidic techniques
 ERC-10404 B70-10461 03

Urban air pollution dispersion model
 AEC-10004 B72-10003 03

Program to determine space vehicle response to wind turbulence
 M-FS-21614 B72-10410 09

WIND VELOCITY MEASUREMENT

Laser-Doppler gas velocimeter
 M-FS-20583 B70-10143 02

Peak wind speed anemometer /maxometer/
 M-FS-20916 B71-10023 07

Laser system detects air turbulence
 M-FS-21244 B73-10210 03

Quartz crystal microbalances to measure wind velocity and air humidity
 NPO-13462 B75-10124 03

WINDING

Stranded superconducting cable of improved design
 ARG-90108 B70-10070 01

Two-axis flux gate magnetometer
 GSFC-10441 B70-10345 01

Computerized toroidal transformer design
 NPO-11115 B70-10606 09

Development of superconductive magnets
 LEWIS-11170 B70-10678 03

Brushless direct-current motor with stationary armature and field
 XGS-05290 B70-10691 02

WINDOWS (APERTURES)

Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
 NPO-11504 B71-10131 03

Saturation current spikes eliminated in saturable core transformers
 ERC-10125 B71-10142 01

Oscillating tank circuit eliminates ballast resistor in lamp control circuit
 M-FS-20891 B71-10275 01

Improved circuit avoids premature power transistor failure
 NPO-11365 B71-10370 02

Spool for releasing and retracting flat conductor cable
 M-FS-20234 B71-10416 08

Brushless DC motor with dual windings
 M-FS-21290 B71-10530 02

Magnets with stabilized conductors
 HQ-10727 B72-10465 03

Open coil structure for bubble-memory-device packaging
 LANGLEY-11704 B75-10219 01

WINDMILLS (WINDPOWERED MACHINES)

Design procedure for low-drag subsonic airfoils
 LANGLEY-11351 B75-10256 03

WINDOWS

Improved transmittance measurement with a magnesium oxide coated integrating sphere
 LEWIS-11840 B72-10717 04

WINDOWS (APERTURES)

Improved ultraviolet resonance lamp
 ARC-10030 B70-10237 01

Radiant heating concept efficient for light-transmitting windows
 M-FS-20630 B70-10324 03

Airborne spectrometer senses several gases
 MSC-13234 B70-10438 03

Inexpensive anti-fog coating for windows
 MSC-13530 B71-10149 04

Nonvolatile read/write memory element - A concept
 GSFC-10993 B71-10346 01

Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01

Combined high vacuum/high frequency fatigue tester
 LEWIS-11210 B71-10405 06

Seating tool for preparing molded-plug terminations on FCC
 M-FS-20123 B71-10417 08

Precision die-punch for trimming the conductors of flat conductor cable
 M-FS-20142 B71-10419 08

Folding tool for preparing FCC molded-plug terminations
 M-FS-20116 B71-10422 08

Clocking connector replaces adapter cables
 M-FS-14778 B71-10428 01

Handling fixture for soldering round wires to FCC
 M-FS-20118 B71-10464 08

Reusable anaerobic system for microbiological studies - A concept
 MSC-13920 B71-10495 05

Increasing the response of PIN photodiodes to the ultraviolet
 ARC-10274 B72-10053 03

- Laser frequency modulation with electron plasma
AEC-10079 B72-10373 03
Flexible shielding system for radiation protection
LRL-10028 B72-10500 03
An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03
Helium window for shock-tube monochromators
NPO-11852 B72-10556 03
Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03
- WINDOWS (INTERVALS)**
Arc protection system for high-power RF amplifiers
NPO-11560 B72-10099 02
- WINDPOWER UTILIZATION**
Wind energy utilization: A bibliography
LEWIS-12518 B75-10136 02
- WINDPOWERED GENERATORS**
Wind energy utilization: A bibliography
LEWIS-12518 B75-10136 02
An experimental 100 kilowatt wind turbine generator
LEWIS-12509 B75-10147 03
- WINDS ALOFT**
Program to determine space vehicle response to wind turbulence
M-FS-21614 B72-10410 09
- WING FLAPS**
Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09
Flex flap
ARC-10771 B73-10502 06
- WING FLOW METHOD TESTS**
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
- WING OSCILLATIONS**
Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 B75-10145 08
- WING SPAN**
Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09
- WING TIPS**
Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02
Flight tests of vortex-attenuating splines
LANGLEY-11645 B74-10187 03
- WINGS**
Reduction of fan noise: A concept
ARC-10312 B72-10040 06
Design procedure for low-drag subsonic airfoils
LANGLEY-11351 B75-10256 03
- WIRE**
Stranded superconducting cable of improved design
ARG-90108 B70-10070 01
Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08
Improved shielding termination adapter for electrical cable connectors
MSC-15565 B70-10217 01
Remotely actuated release mechanism
NPO-10698 B70-10286 01
Ultra-flexible biomedical electrodes and wires
ARC-10268 B70-10420 05
- Kinetic inductance measured in a superconducting wire
ERC-10305 B70-10491 03
High-temperature, long-term drift of platinum-rhodium thermocouples
LEWIS-11111 B70-10552 01
High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
Low-cost high-temperature brazing material
LEWIS-11209 B70-10672 04
Subminiature transducer measures unsteady pressures
ARC-10349 B71-10114 01
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
Improved sheath removal technique for very small thermocouples
LEWIS-11228 B71-10179 01
Small size transformer provides high power regulation with low ripple and maximum control
M-FS-16709 B71-10193 01
Explosive bonded TZM-wire-reinforced C129Y columbium composites
M-FS-20925 B71-10356 04
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
Cable insulation cut-through tester
M-FS-20114 B71-10459 08
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
Contact-resistance test probes: A concept
M-FS-16891 B71-10471 01
Computer design of extension springs
M-FS-24073 B71-10473 09
Scale factor gage for fiber optics inspection device
MSC-17361 B71-10496 07
Glass tube splitting tool
MSC-17183 B71-10516 07
Anti-slipping system improves wire saw performance
MSC-13508 B71-10522 07
Hexapole magnet field analysis
GSFC-10995 B72-10113 03
Optical shutter for use in shock tubes
ARC-10516 B72-10128 03
Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
Improved high-performance shock tube
NPO-11885 B72-10242 03
New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
A manually set magnetic wire counter
AEC-10039 B72-10369 01
Magnet-wire wrapping tool for integrated circuits
NPO-11815 B72-10426 07
An approach to real-time process control of semiconductor wire-bonding
M-FS-21558 B72-10644 08
Production of small diameter high-temperature-strength refractory metal wires
LEWIS-11802 B73-10003 08
- Electro-optical device for monitoring wire size
LANGLEY-11358 B73-10321 02
High strength, wire-reinforced electroformed structures
LEWIS-12087 B74-10018 08
- WIRE BRIDGE CIRCUITS**
Wein bridge oscillator circuit
MSC-13686 B71-10089 01
- WIRE CLOTH**
Flexible protection for metal bellows
KSC-10520 B70-10350 06
Molecular sieves control contamination and insulate in thermal regenerators - A concept
GSFC-10910 B70-10424 07
Oxidation-resistant silicide coating applied to columbium alloy screen
ARC-10186 B71-10229 04
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04
- WIRE GRID LENSES**
Efficient wire-grid duplexer-polarized for CO2 lasers
GSFC-11403 B72-10440 03
- WIRE WINDING**
High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Magnet-wire wrapping tool for integrated circuits
NPO-11815 B72-10426 07
- WIRELESS COMMUNICATIONS**
Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 B70-10335 01
Wireless telemetry system for floating bodies
KSC-10855 B74-10028 06
- WIRING**
Wiring harnesses documented by punched-card technique
NPO-11249 B70-10091 09
Electrical test wire attachment device
KSC-10562 B70-10488 01
Accurate, rapid, temperature and liquid-level sensor for cryogenic tanks
LEWIS-11208 B70-10628 03
Program for improved electrical harness documentation and fabrication
GSFC-10386 B71-10054 09
High-reliability release mechanism
LEWIS-11233 B71-10080 07
Ceramic wiring board increases packaging density of electronic modules
MSC-13497 B71-10084 01
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
High voltage lightning grounding device
LEWIS-11282 B71-10136 01
Side wire feed for welding apparatus
NPO-13148 B74-10214 08
High-voltage distributors
GSFC-11849 B74-10242 01
Fluorescent color coding of power receptacles
MSC-19504 B75-10109 01

WOOD

- Locating tube blockage that X-ray cannot detect
 NUC-10386 B71-10129 06
 Portable lightweight bandsaw
 M-FS-16927 B71-10237 07
 Technique for in-place welding of aluminum backed up by a combustible material
 LEWIS-11328 B71-10257 08
 Balsa wood as an energy dissipator
 NPO-11839 B73-10388 04

WORK CAPACITY

- Restraint and locomotion aid
 ARC-10153 B72-10558 06

WORK FUNCTIONS

- Optimum doping achieves high quantum yields in GaAs photoemitters
 M-FS-20962 B71-10357 03
 Silicon contact for area reduction of integrated circuits
 M-FS-20688 B71-10368 01
 A voltage-tunable three-terminal Gunn device
 HQ-10783 B72-10518 01
 High temperature gallium phosphide rectifiers
 LEWIS-11804 B72-10673 01
 High-performance Schottky diodes endure high temperatures
 M-FS-23184 B75-10101 01
 Integrated-circuit balanced parametric amplifier
 M-FS-23193 B75-10102 01
 Laser-to-electricity energy converter for short wavelengths
 NPO-13390 B75-10119 03
 Schottky barrier solar cell promises improved efficiency
 NPO-13482 B75-10125 03

WORK HARDENING

- The mechanism of stress-corrosion cracking in 7075 aluminum alloy
 M-FS-18614 B70-10527 04
 Plating by glass-bead peening
 GSFC-11163 B71-10256 08

WORKING FLUIDS

- Condensation of wet vapors in turbines
 NPO-10773 B70-10613 09
 Performance map of a heat pipe charged with ammonia
 NPO-11454 B70-10726 03
 The heat pipe - A simple, versatile, efficient heat transfer tool
 NPO-11598 B71-10109 06
 Hydrostatic liquid-bearing for precision gyro
 M-FS-21138 B71-10207 07
 Dynamic response of viscous compressible fluids in rigid tubes
 M-FS-20542 B71-10269 03
 Radial heat flux transformer
 NPO-10828 B71-10311 03
 Literature review and experimental investigation of heat pipes
 M-FS-21074 B71-10353 03
 Cavitating Venturi sump
 ARC-10504 B72-10012 06
 Restartable heat pipe
 ARC-10198 B72-10188 03

WRENCHES

- Special wrench for B-nuts reduces torque stress in tubing
 MSC-15885 B70-10550 07
 Bolt installation tool for tightening large nuts and bolts
 NPO-13059 B74-10164 07

WROUGHT ALLOYS

- A method for obtaining high ductility in critical areas of aluminum castings
 M-FS-18705 B70-10121 08
 Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
 M-FS-18427 B70-10199 04
 New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
 LEWIS-11828 B74-10003 04
 Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
 LEWIS-12089 B74-10081 03

X**X RAY ANALYSIS**

- Improved silicon solar cells
 LEWIS-10964 B70-10029 01
 Reference for radiographic film interpreters
 M-FS-16695 B70-10189 03
 Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03
 Analysis of microsize particulates
 ARC-10647 B72-10565 04
 X-ray opaque additive for inspection of weld joints
 M-FS-22896 B73-10528 08
 Simple computer method provides contours for radiological images
 ARC-10940 B75-10146 09

X RAY APPARATUS

- Radiological control manual
 M-FS-22092 B72-10460 03

X RAY ASTRONOMY

- Compact source of soft X-rays
 HQ-10732 B74-10232 03

X RAY DIFFRACTION

- Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitril fluoride
 ARG-10412 B70-10233 04
 Producing graphite with desired properties
 NUC-11001 B71-10042 04
 Analysis of microsize particulates
 ARC-10647 B72-10565 04
 Collimation of electron and X-ray beams using zeolite crystals
 NPO-13557 B75-10329 03

X RAY FLUORESCENCE

- Superconductor transition temperatures study
 M-FS-21247 B71-10385 03

X RAY INSPECTION

- Sonic impedance technique detects flaws in polyurethane foam spray-on insulation
 M-FS-20561 B70-10012 06
 Locating tube blockage that X-ray cannot detect
 NUC-10386 B71-10129 06
 Technique for the integral casting of pressure instrumentation in wind-tunnel models
 LANGLEY-10812 B71-10247 08
 Video enhancement of X-ray and neutron radiographs
 LEWIS-11944 B73-10009 03
 Noncontacting devices to indicate deflection and vibration of turbopump internal rotating parts
 M-FS-22678 B73-10518 06

- Method of measuring the thickness of radioactive thin films
 LEWIS-11971 B74-10065 03

X RAY IRRADIATION

- Determination of diffusion lengths in silicon by an X-ray method
 LEWIS-10984 B70-10150 01
 Irradiation of MOS-FET devices to provide desired logic functions
 GSFC-11061 B72-10719 01

X RAY LASERS

- Soft X-ray lasers using distributed-feedback reflection: A concept
 NPO-13532 B75-10239 03

X RAY SOURCES

- Compact source of soft X-rays
 HQ-10732 B74-10232 03

X RAY SPECTROSCOPY

- Remote sensing X-ray spectrometer
 MSC-13978 B72-10016 03

X RAY TELESCOPES

- Measurement of X-ray scattering by optical surfaces
 GSFC-11590 B73-10283 03

X RAYS

- Improved magnetron cold-cathode ion source
 LANGLEY-10387 B70-10023 02
 Detection and location of metal fragments in the human body
 M-FS-14797 B70-10107 05
 Reduction of background in an X-ray proportional counter
 HQ-10253 B70-10169 02
 Neutron-image intensifier
 ARG-10249 B70-10240 03
 Quadrupole ionization gage measures ultrahigh vacuum
 LANGLEY-10397 B70-10620 03
 Multilayered printed circuit boards inspected by X-ray laminography
 M-FS-20849 B71-10226 02
 Simple spectroscopy used with solid state image amplifier over wide spectral range
 M-FS-21345 B71-10378 03
 A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
 M-FS-20546 B71-10439 02
 Optimized techniques and requirements for computer improvement of structural weld radiographs
 M-FS-21627 B71-10492 09
 A liquid radiation detector with high spatial resolution
 MSC-13965 B72-10034 03
 Improved intensifying screen reduces X-ray exposure
 AEC-10090 B72-10232 03
 Radiation-induced nickel deposits
 LEWIS-10965 B72-10456 04
 Improved channel multiplier for radiation-and-particle detectors
 NPO-12128 B74-10275 03

X-Y PLOTTERS

- Device for printing alphanumeric listings and digital data plots
 LEWIS-10954 B70-10002 02
 Several new catalysts for reduction of oxygen in fuel cells
 HQ-10452 B70-10021 01
 Improved low cost ac-to-dc converter
 NPO-11055 B70-10076 01
 Wide-range tracking oscillator generates phase and frequency coherent output
 M-FS-14518 B70-10451 02

XENON

Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04

XENON

Vacuum leak detector features higher sensitivity

ERC-10034 B70-10493 03

A liquid radiation detector with high spatial resolution

MSC-13965 B72-10034 03

High-temperature, long-life thyratron

LEWIS-11327 B72-10134 01

Separation of gas mixtures by centrifugation

ARC-10449 B72-10270 03

XENON ISOTOPES

Enhanced Lamb dip for absolute laser frequency stabilization

HQ-10695 B72-10481 02

XENON LAMPS

Compact apparatus for photogeneration of hydrated electrons

ARG-10487 B70-10036 03

Optical contamination during thermal testing in vacuum

M-FS-20736 B70-10659 03

Small, efficient power supply for xenon lamps

MSC-13637 B70-10684 01

A 7.6m /25-ft/ extreme environments simulator

NPO-11353 B71-10036 03

Oscillating tank circuit eliminates ballast resistor in lamp control circuit

M-FS-20891 B71-10275 01

An absorption spectrum amplifier for determining gas composition

HQ-10752 B72-10524 03

Improved xenon lamp for solar simulators: A concept

NPO-13128 B74-10195 03

Uniform high irradiance source

LEWIS-12360 B75-10008 03

XYLENE

New method for photoresist stripping

ERC-10239 B70-10497 04

Improved reflective coating for integrating spheres

GSFC-10855 B71-10110 03

Y

YARNS

NASA-tricot - A lightweight radar reflective, knitted fabric

LANGLEY-10776 B71-10342 04

Fabrication of uniaxial filament-reinforced epoxy tubes for structural application

LANGLEY-10203 B72-10340 04

Nonflammable and abrasion resistant coating process for glass fibers

MSC-14024 B72-10445 08

YAW

Inertial reference unit

NPO-11518 B72-10094 02

Interferometric rotation sensor

ARC-10278 B72-10274 03

YIELD

Improved methods of forming monolithic integrated circuits having complementary bipolar transistors

LANGLEY-10358 B71-10035 01

YIELD STRENGTH

Self-lubricating fluorine shaft seal material

HQ-10112 B70-10222 04

Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075

M-FS-18794 B70-10506 04

The mechanism of stress-corrosion cracking in 7075 aluminum alloy

M-FS-18614 B70-10527 04

Analytical prediction of reverse buckling pressure for thin shells

KSC-10515 B70-10582 06

Process for producing molybdenum foil and collapsible tubing

GSFC-10008 B71-10073 08

Explosive bonded TZM-wire-reinforced C129Y columbium composites

M-FS-20925 B71-10356 04

Simple method for forming thin-wall pressure vessels

ARC-10511 B72-10025 08

Acoustic emission used as weld quality monitor

AEC-10018 B72-10427 08

Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten

LEWIS-10800 B72-10454 04

Influence of heat treatment on mechanical properties of 300M steel

MSC-14792 B75-10271 04

YTTRIUM ALLOYS

Oxidation resistant iron and nickel alloys for high temperature use

LEWIS-10936 B70-10210 04

Advanced protective coating for superalloys

LEWIS-11473 B72-10150 04

YTTRIUM OXIDES

Readily fiberizable glasses having a high modulus of elasticity

HQ-10593 B70-10432 04

Floating zone process for drawing small diameter fibers of refractory materials

LEWIS-11380 B72-10491 04

YTTRIUM-ALUMINUM GARNET

Laser scribing of silicon wafers

ERC-10386 B70-10437 01

Dually-mode-locked ND: YAG laser

GSFC-11746 B74-10038 03

YTTRIUM-IRON GARNET

A simple tester provides resonant frequency measurements of ferrite devices

NPO-10678 B70-10033 01

Solid state variable time delay

ERC-10032 B70-10492 01

Z

ZENER EFFECT

Voltage regulator dissipates minimal power and functions as a voltage divider

B71-10367 01

ZENITH

Compensating subreflector for two-reflector antennas: A concept

NPO-11503 B72-10093 06

ZEOLITES

Molecular sieves control contamination and and insulate in thermal regenerators

- A concept

GSFC-10910 B70-10424 07

Soft X-ray lasers using distributed-feedback reflection: A concept

NPO-13532 B75-10239 03

Collimation of electron and X-ray beams using zeolite crystals

NPO-13557 B75-10329 03

ZERO LIFT

Mislift and miss-drag programs

LANGLEY-10932 B72-10153 09

ZINC

Improved alkaline electrochemical cell

GSFC-10792 B70-10153 01

Suppression of zinc dendrites in zinc electrode power cells

HQ-10550 B70-10434 02

Visible light electroluminescent diodes of indium-gallium phosphide

ERC-10303 B70-10474 01

Optimum doping achieves high quantum yields in GaAs photoemitters

M-FS-20962 B71-10357 03

ZINC COATINGS

An improved technique for the use of zinc-rich coatings

KSC-10766 B73-10149 04

Survey of coatings for solar collectors

LEWIS-12510 B75-10067 04

ZINC COMPOUNDS

Plasma calcining of pigment particles for thermal control coatings

M-FS-21267 B72-10320 04

Flexible shielding system for radiation protection

LRL-10028 B72-10500 03

ZINC OXIDES

Improved process of fabricating ferrite cores for magnetic logic circuits

LANGLEY-10036 B70-10104 04

Improved alkaline electrochemical cell

GSFC-10792 B70-10153 01

Thin film devices used as oxygen partial pressure sensors

XLA-06473 B70-10419 04

Readily fiberizable glasses having a high modulus of elasticity

HQ-10593 B70-10432 04

Potassium silicate-zinc oxide solution for metal finishes

GSFC-10361 B70-10600 04

Improved thermal paint formulation

M-FS-14706 B71-10180 03

Study of in-situ degradation of thermal control surfaces

M-FS-20892 B72-10336 04

Investigation of environmental effects on coatings for thermal control

M-FS-21932 B72-10596 04

Improved zinc oxide thermal control coatings

NPO-11139 B72-10711 04

ZINC SELENIDES

High efficiency optical beamsplitter designed for operation in the infrared region

GSFC-10721 B70-10211 02

ZINC SULFIDES

Color television system using single gun color cathode ray tube

ERC-10098 B70-10464 02

ZIPPERS

Stable, inflatable life raft for high seas rescue operations

MSC-12393 B71-10167 05

Reusable anaerobic system for microbiological studies - A concept

MSC-13920 B71-10495 05

- Zipper-type electrical connectors
NPO-11639 B72-10159 01
- ZIRCONATES**
Bimorph piezoelectric device functions as
flapper valve
ERC-10082 B70-10382 01
Subminiature transducer measures
unsteady pressures
ARC-10349 B71-10114 01
- ZIRCONIUM**
High-temperature ceramic-to-ceramic
seals
ARC-10319 B72-10199 04
Oxygen reclamation with solid oxide
electrolytes
ARC-10487 B72-10273 03
- ZIRCONIUM ALLOYS**
Directionally solidified superalloy
HQ-10522 B70-10058 04
Grinding as an approach to the
production of high-strength,
dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
Oxidation-resistant coatings for refractory
metals used in inert atmospheres
NPO-11477 B70-10674 04
Insulating effectiveness of self-spacing
dimpled foil
LEWIS-10941 B72-10406 04
Braze alloys for high temperature
service
LEWIS-11374 B73-10205 06
- ZIRCONIUM COMPOUNDS**
Development of superconductive
magnets
LEWIS-11170 B70-10678 03
- ZIRCONIUM HYDRIDES**
Grinding as an approach to the
production of high-strength,
dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
- ZIRCONIUM OXIDES**
Biaxial prestressing of brittle materials
M-FS-20272 B70-10316 04
Heat-barrier coatings for combustion
chambers
M-FS-18618 B70-10363 07
Readily fiberizable glasses having a high
modulus of elasticity
HQ-10593 B70-10432 04
Simple bonding technique for
high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
High-temperature oxidation and
erosion-resistant refractory coatings
LEWIS-11221 B70-10634 04
Granular two-phase insulation systems
NPO-12068 B71-10290 04
Fabrication of large ceramic electrolyte
disks
ARC-10320 B72-10202 03
Refractory porcelain enamel
passive-thermal-control coating for
high-temperature superalloys
M-FS-22324 B73-10215 04
Eutectic bonding of sapphire to
sapphire
GSFC-11577 B73-10284 08
- ZONE MELTING**
Growth of phase-pure, crack-free single
crystals and large-grained polycrystals of
molybdenum disilicide
HQ-10450 B70-10206 04

PERSONAL AUTHOR INDEX

Cumulative Index to NASA Tech Briefs

1970 — 1975

Personal Author Index

This index is arranged alphabetically by author. The Tech Brief title is listed followed by the originating Center number, e.g., NPO-13394. The Tech Brief number, e.g., B75-10179 is followed by a two-digit number, e.g., 08, which designates the subject category.

A

- AAGARD, R. L.**
Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
- AARDAHL, C. E.**
Three-dimensional models aid visualization of engineering drawings
NPO-13394 B75-10179 08
- ABBATE, J. V.**
The determination of stability domains for nonlinear dynamical systems
M-FS-14832 B70-10539 03
- ABE, J. T.**
Solenoid valve performance characteristics studied
M-FS-12458 B70-10066 07
- ABEL, H. P.**
Welded polypropylene liners for large descaling tanks
M-FS-18711 B71-10012 07
- ABEL, I. R.**
Wide-field reflective scanning optical systems
JSC-14096 B73-10279 03
- ABERNATHY, W. J.**
Precision machining of steel decahedrons
M-FS-21361 B72-10597 07
- ABHYANKAR, K.**
Interferometer for measurement of optical polarization
NPO-11239 B70-10405 03
- ABREU, A.**
Battery simulation program
NPO-11580 B71-10250 09
A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09
- ABSALOM, J.**
Fast-acting, four-way slide valve
M-FS-18608 B70-10228 07
- ABSHIRE, J. B.**
Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03
- ACCOUNTIUS, O. E.**
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Improved mold release for filled-silicone compounds
JSC-19300 B73-10338 04
- ACKERMAN, G. H.**
Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04
- ACRES, R. L.**
Combination pressure regulator and safety valve: A Concept
MSC-14088 B72-10446 06
High pressure liquid gas pump
MSC-14087 B72-10590 06
- ACUNA, M. H.**
Two-axis flux gate magnetometer
GSFC-10441 B70-10345 01
High-voltage stepping supply with fast settling time
GSFC-11844 B75-10191 02
- ADACHI, R. R.**
Programmed physiological infusion system
ARC-10447 B72-10126 05
- ADAMS, D. W.**
High torque bellows seal rotary drive
LEWIS-11813 B72-10681 07
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M-FS-20715 B70-10155 08
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An investigation of the strength of aluminum wire used in integrated circuits
NPO-11219 B70-10275 01
- ADAMS, R.**
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- ADAMSON, M. J.**
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ARC-10592 B72-10709 04
- ADELMAN, A. H.**
Erasable holographic medium using cis-trans isomerization
M-FS-22062 B72-10720 03
- ADELMAN, H. M.**
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
- ADLARD, C. J.**
Inexpensive pocket-size solar energy meter (insolometer)
LEWIS-12598 B75-10283 01
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MSC-13978 B72-10016 03
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Aluminum alloys with improved strength
M-FS-23239 B75-10200 04
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Synthesis of dynamic systems
M-FS-21490 B71-10491 09
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M-FS-22848 B74-10076 06
- AEGERTER, S.**
Ohmic diode
HQ-10534 B70-10200 01
Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
- AGNEW, C. V.**
Pseudo-saturating power converter
NPO-11368 B72-10042 01
- AGUILAR, A. G.**
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MSC-17713 B72-10562 08
- AISENBERG, S.**
Interferometric measurement of the velocity of radiating particles
HQ-10371 B72-10495 03
- AJIOKA, J. S.**
High-efficiency multifrequency feed
GSFC-11909 B74-10288 02
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Automatic data generation scheme for finite-element method /FEDGE/ - Computer program
NPO-11069 B70-10067 09
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LEWIS-12178 B74-10129 09
- ALDRIDGE, C., JR.**
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MSC-14062 B75-10167 05
- ALERS, G. A.**
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M-FS-19218 B73-10440 03
- ALEXANDER, H. R.**
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Squib-operated disconnect
NPO-11330 B72-10713 06
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LEWIS-11866 B74-10063 03
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LEWIS-11971 B74-10065 03
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LEWIS-12083 B75-10001 03

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LEWIS-12064 B73-10313 02
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LEWIS-12059 B73-10410 02

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LEWIS-11346 B71-10373 09
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LEWIS-11110 B72-10483 09

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M-FS-21573 B72-10617 05
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NUC-10211 B70-10533 01

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GSFC-11540 B73-10073 09

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ARC-10869 B75-10027 04

ALVAREZ, L.

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MSC-13965 B72-10034 03

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NPO-11340 B70-10516 07

AMMANN, E. O.

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M-FS-20554 B70-10681 03

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MSC-13275 B70-10570 01

AMON, M.

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GSFC-11487 B73-10468 03

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LEWIS-11003 B70-10584 01

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ARC-10533 B72-10302 03

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LANGLEY-11232 B74-10092 06
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LANGLEY-10850 B74-10132 04

ANDERSON, D. A.

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LEWIS-11503 B72-10292 07

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MSC-12432 B71-10511 07

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NPO-10844 B70-10009 02
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NPO-10629 B70-10051 01
Ranging code processor
NPO-10066 B70-10060 02
Systems of coding and their implementation
NPO-11469 B71-10006 09
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NPO-11421 B72-10088 02
Minimum switching network for generating the weight of a binary vector
NPO-11590 B73-10274 09

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NPO-11914 B73-10350 01

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NPO-11936 B73-10351 01

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NPO-11630 B73-10355 02

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NPO-11886 B73-10390 01

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NPO-13097 B75-10323 02

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NPO-13428 B75-10326 02

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LEWIS-10856 B70-10468 07

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LEWIS-11152 B71-10173 07

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NUC-11019 B72-10258 06

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M-FS-20984 B72-10333 04

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M-FS-20560 B70-10015 08

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M-FS-20757 B70-10387 01

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M-FS-20120 B71-10060 08

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M-FS-21009 B71-10379 01

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M-FS-20234 B71-10416 08

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M-FS-20237 B71-10420 08

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M-FS-20236 B71-10421 08

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M-FS-20115 B71-10460 08

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M-FS-20117 B71-10461 08

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M-FS-20119 B71-10465 08

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M-FS-20111 B72-10575 07

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M-FS-21448 B72-10595 08

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ARC-10845 B74-10075 05
- ANTHONY, K. G.**
Self-regenerating desiccant system
M-FS-23057 B74-10266 07
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M-FS-23272 B75-10301 08
- ANTHONY, P. L.**
Magnetic circuitry mutual coupling probe
M-FS-21664 B72-10535 02
- APPLEBERRY, W. T.**
Perload indicating turnbuckle
M-FS-21488 B72-10355 07
Variable load indicator
M-FS-21728 B73-10335 07
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Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Vibration measurement by pulse differential holographic interferometry
LANGLEY-11092 B73-10075 03
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High-sensitivity receiver for CO₂ laser communications
GSFC-11455 B73-10223 02
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Inhibiting Kirkendall void growth in welded bimetallic structures
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NPO-11353 B71-10036 03
- ARMENTROUT, E. C.**
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LEWIS-11822 B73-10015 01
- ARMSTRONG, G. K.**
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MSC-13432 B70-10546 04
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ARC-10492 B72-10127 03
- ARMSTRONG, W. H.**
New structural approach for determining load carrying capability of filament wound composite materials
M-FS-15121 B70-10408 06
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Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
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NPO-13148 B74-10214 08
- ARNOLD, C. B.**
Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03
- ARNOLD, C. R.**
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LANGLEY-10681 B72-10328 04
- ARNOLD, W. E., JR.**
The weld-brazing metal joining process
LANGLEY-11072 B72-10683 08
- ARONSON, H.**
A new optical recording medium
M-FS-22348 B73-10095 03
- ARRIOLA, S.**
Clocking connector replaces adapter cables
M-FS-14778 B71-10428 01
- ARVESEN, J. C.**
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ARC-10648 B72-10566 04
Optical detection of oil on water
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AEC-10013 B72-10004 03
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LEWIS-11229 B71-10489 04
High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04
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LEWIS-11953 B73-10172 04
- ASHCRAFT, A. C.**
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NPO-11730 B73-10036 04
TLC determination of functionality in prepolymers
NPO-11731 B73-10037 04
- ASHER, I. M.**
Temperature control of a cryogenic bath
HQ-10788 B72-10532 03
- ASHER, W. J.**
A methanol/air fuel cell system
M-FS-22541 B73-10472 07
An electrochemical engine
M-FS-22542 B73-10473 07
Vapor-deposited platinum as a fuel-cell catalyst
M-FS-21317 B73-10475 04
Fuel-cell heat and mass plate
M-FS-21318 B73-10489 07
- ASHFORD, N. A.**
Investigation of environmental effects on coatings for thermal control
M-FS-21932 B72-10596 04
- ASHLEY, W. W.**
Cutting thin sections of bone
ARC-10555 B72-10303 05
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Processor for high-density digital tape-recorded signals
NPO-11399 B73-10354 02
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LEWIS-11490 B74-10124 04
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M-FS-21277 B72-10112 01
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LANGLEY-11628 B74-10264 04
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M-FS-21290 B71-10530 02
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Analysis and design of a flat central finned-tube radiator
LEWIS-10893 B71-10399 09
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GSFC-11829 B74-10230 03
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M-FS-22324 B73-10215 04
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HQ-10851 B75-10088 01
- AUSKERN, A.**
Strengthening lightweight concrete
AEC-10017 B72-10430 04
- AUSTIN, D. L.**
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M-FS-16695 B70-10189 03
- AUSTIN, F. H.**
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LANGLEY-11282 B73-10160 01
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M-FS-23306 B75-10310 04
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M-FS-20634 B70-10386 04
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M-FS-21441 B72-10487 03
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M-FS-23026 B74-10150 02
- AVIZIENIS, A. A.**
Self testing and repairing computer - A concept
NPO-10567 B70-10452 09
Low-cost coding techniques for digital fault diagnosis
NPO-11701 B73-10344 09

B

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Improved process of fabricating ferrite cores for magnetic logic circuits
LANGLEY-10036 B70-10104 04

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ARC-10247 B72-10195 05
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LEWIS-11750 B72-10684 04

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LEWIS-12523 B75-10150 02

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M-FS-22672 B73-10432 09

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M-FS-21074 B71-10353 03

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ERC-10290 B70-10383 01
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HQ-10407 B71-10075 01
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HQ-10766 B72-10657 05
Metabolic simulation chamber
HQ-10776 B72-10658 05
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HQ-10777 B72-10659 05
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HQ-10778 B72-10660 05
Simulated breath waveform control
HQ-10779 B72-10661 05
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NUC-11029 B70-10591 03
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ARC-10030 B70-10237 01
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GSFC-11403 B72-10440 03
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Ion-tracer anemometer
M-FS-21399 B73-10151 04
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Gas-flow restrictor
NPO-10117 B72-10703 03
- BASTIEN, R. C.**
High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
Unsupported thin film beam splitter
GSFC-10525 B72-10471 02
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M-FS-21424 B71-10519 03
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Improved noise-adding radiometer for microwave receivers
NPO-11706 B73-10345 02
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Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06
Low-noise microwave polarimeter
NPO-11512 B73-10134 02
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LRL-10031 B72-10314 03
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- BATTIN, R. A.**
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09
- BATTIN, R. H.**
Method of statistical filtering
MSC-13493 B70-10427 06
- BATTS, C. N.**
Integrator for on-line measurement of buffet signals
LANGLEY-10627 B70-10639 02
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- BATZOLD, J. S.**
Vapor-deposited platinum as a fuel-cell catalyst
M-FS-21317 B73-10475 04
- BAUCOM, R. M.**
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LANGLEY-11399 B73-10240 06
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LANGLEY-11601 B74-10141 08
Lightweight orthotic braces
LANGLEY-11894 B75-10303 05
- BAUGHMAN, J. R.**
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M-FS-18677 B70-10325 03
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LEWIS-11327 B72-10134 01
- BAUMAN, A. J.**
Combining micro dry column chromatography and mass spectrometry
NPO-11240 B70-10231 03
Removal of ice and marine growth from ship surfaces: A concept
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LANGLEY-10711 B70-10660 09
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LANGLEY-11184 B73-10091 09
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LANGLEY-11125 B75-10217 02
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M-FS-22728 B74-10044 09
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Magnetometer uses bismuth-selenide
LEWIS-11632 B72-10629 03
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Thermoelectric radiometer
ARC-10138 B70-10056 02
Laser beam hydrocarbon detector
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- BEAM, R. M.**
Metal tube used as solar engine
ARC-10461 B73-10493 03
- BEASLEY, B.**
Prevention of cracking of soldered joints in electronic assemblies
M-FS-20544 B70-10241 08
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Filler-wire positioner for electron beam welding
MSC-15637 B70-10604 08
- BEAVER, E. A.**
Digital multichannel photometer
HQ-10791 B74-10200 03
- BEAVIN, R. L.**
High-efficiency K-band tracking antenna feed
MSC-14717 B75-10107 02
- BECK, F. B.**
Horn antenna with v-shaped corrugated surface
LANGLEY-11112 B74-10260 01
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Alignment microscope for rotating laser scanner
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Stress corrosion crack inhibiting method for titanium
NPO-10271 B70-10129 03
A new method for the determination of thin film porosity
HQ-10673 B73-10286 01
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HQ-10574 B70-10574 04
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KSC-10069 B70-10339 07
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LEWIS-11175 B70-10498 01
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LEWIS-11159 B72-10227 03
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KSC-10400 B70-10225 06
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Graphite ionization vacuum gauge
LANGLEY-11338 B74-10136 03
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NPO-11402 B72-10084 06
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Microminiaturized, biopotential conditioning system (MBCS)
JSC-14180 B73-10236 02
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Thermal-difference compensation for structural members
M-FS-20433 B70-10014 07
Emergency descent device
M-FS-23074 B74-10226 05
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Flexible temperature probe for biological systems
ARC-10796 B73-10498 05
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Improved elastomer for use with oxygen difluoride
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Simple turbine balancing test apparatus
LEWIS-11658 B72-10377 07
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Preparing thermoplastic aromatic polyimides
LANGLEY-11372 B73-10319 04

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 LANGLEY-11397 B75-10257 08
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 LANGLEY-11829 B75-10261 08
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 Computer program to determine the irrotational nozzle admittance
 LEWIS-12019 B73-10233 09
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 Technique for lowering the noise figure in RF amplifiers
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 Evaluation of omniweave reinforcement for composite fabrication
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 Small-scale explosive welding of aluminum
 LANGLEY-10941 B72-10002 04
 New explosive seam welding concepts
 LANGLEY-11211 B73-10180 04
 Apparatus for monitoring linear explosive performance
 LANGLEY-10800 B74-10201 04
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 Cathode for use with low density gases
 HQ-10687 B72-10530 01
 Prevention of cathode damage from positive ion bombardment
 HQ-10688 B72-10654 03
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 Compression and R-wave detection of ECG/VCG data
 MSC-14126 B72-10391 05
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 ARC-10928 B75-10030 05
- BENSON, B. A.**
 Electrical gas heater with large flow range capability
 LEWIS-12361 B75-10024 03
- BENSON, D. K.**
 Graphite ionization vacuum gauge
 LANGLEY-11338 B74-10136 03
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 Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
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 GSFC-10789 B70-10188 01
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 Glass technology involved in the manufacture of magnetometer components
 GSFC-11283 B72-10132 03
- BERGER, H.**
 Neutron-image intensifier
 ARG-10249 B70-10240 03
- BERGGREN, C. C.**
 Improved magnesia for thermal control coatings
 ARC-10677 B72-10424 04
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 NPO-11390 B70-10585 04
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 LEWIS-11003 B70-10584 01
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 LEWIS-11069 B72-10177 02
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 Commutating brushes tested in dc motors in dry argon atmospheres
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 Improved reinforcement for openings in difficult fabrics
 MSC-13554 B70-10489 08
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 Analysis and optimization of an omnidirectional direction-finding system
 M-FS-14346 B70-10112 02
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 Computer program for the prediction of reorientation flow dynamics
 LEWIS-11816 B73-10307 09
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 M-FS-22833 B73-10474 05
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 KSC-10546 B71-10246 02
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 LANGLEY-11312 B73-10513 02
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 ARC-10314 B71-10443 04
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 Lightning flash detection system
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 Image data rate converter: A concept
 NPO-11659 B73-10277 02
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 Two autowire versions for CDC-3200 and IBM-360
 GSFC-11526 B72-10608 09
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 ARC-10598 B72-10563 03
 Infrared tunable laser: A concept
 ARC-10463 B75-10081 03
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 NPO-11924 B74-10160 01
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 New hyperthermal thermosetting heterocyclic polymers
 LANGLEY-10221 B70-10403 04
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 GSFC-10891 B70-10195 02
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 LEWIS-11083 B70-10323 01
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HQ-10407 B71-10075 01
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JSC-14285 B73-10305 02
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LEWIS-11638 B72-10137 04
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LEWIS-11827 B74-10002 04
New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04
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ARC-10702 B73-10130 03
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M-FS-12458 B70-10066 07
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KSC-10619 B73-10053 09
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M-FS-14170 B70-10089 07
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M-FS-21573 B72-10617 05
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M-FS-22022 B73-10204 07
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M-FS-22266 B73-10216 07
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HQ-10271 B70-10094 04
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HQ-10269 B70-10294 04
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ARC-10647 B72-10565 04
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LANGLEY-10738 B71-10052 09
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Electrothermal fracturing of tensile specimens
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LEWIS-12238 B74-10078 02
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Compact electric heater
LEWIS-11172 B70-10677 03
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LEWIS-10982 B72-10378 04
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NPO-10774 B70-10017 04
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LEWIS-11155 B70-10689 01
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Stem clutch for motor driven valve
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MSC-13476 B71-10066 03
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MSC-13475 B71-10295 09
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Fill and vent quick disconnect
M-FS-21822 B72-10645 07
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Improved reversible coulometer cell
SAN-10051 B71-10176 02
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NPO-13082 B74-10276 02
Automated mass spectrometer/analysis system: A concept
NPO-13572 B75-10331 05
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Backflushing system rapidly cleans fluid filters
JSC-14273 B73-10405 06
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Economic method for measuring ultra-low flow rates of fluids
NPO-12064 B70-10531 04
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NPO-11258 B70-10214 01
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NPO-12026 B71-10293 08
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ERC-10271 B70-10481 02
- BOHANNON, R. O., JR.**
Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01
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Electrodes for sealed secondary batteries
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XAC-09489 B72-10036 07
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LEWIS-10941 B72-10406 04
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MSC-15788 B70-10526 07
- BONNER, W. B.**
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AEC-10049 B72-10429 05
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Derivation of a general perturbation solution - Its application to determination of orbit
MSC-13377 B70-10442 03
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ARC-10772 B73-10501 03
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NPO-11725 B72-10707 03
- BOSHERS, W. A.**
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M-FS-23059 B74-10267 06
- BOSLEY, J. T.**
Quick response targeting program
M-FS-15157 B71-10147 09
- BOSOMWORTH, D. R.**
A visual-display and storage device
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HQ-10508 870-10072 07

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M-FS-20908 870-10714 07

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M-FS-22295 873-10256 09

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ARC-10557 872-10417 02

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LEWIS-12595 875-10288 03

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LEWIS-11060 B70-10361 04
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- BROWN, H.**
New reaction tester accurate within 56 microseconds
MSC-13604 B72-10031 05
- BROWN, J. J.**
Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02
- BROWN, R. A.**
Fluid operated quick release mechanism
M-FS-20205 B72-10640 07
- BROWN, R. L.**
Detection and location of metal fragments in the human body
M-FS-14797 B70-10107 05
Neutron radiographic viewing system
M-FS-22024 B72-10468 02
X-ray opaque additive for inspection of weld joints
M-FS-22896 B73-10528 08
- BROWN, R. L. SR.**
Simple spectroscopy used with solid state image amplifier over wide spectral range
M-FS-21345 B71-10378 03
Aircraft communication via telefacsimile system
M-FS-20839 B72-10139 02
- BROWN, R. M.**
Radiant energy absorption enhancement in optical imaging systems
ARC-10194 B71-10112 03
Stabilization of interferometer fringe patterns
ARC-10392 B71-10119 02
Variable ratio beam splitter for laser applications
ARC-10391 B71-10265 03
Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03
Three-point bridge calibration with one resistor
ARC-10762 B74-10047 01
- BROWN, V. D.**
A vacuum chamber feedthrough
M-FS-21133 B73-10152 01
- BROWN, W.**
Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease
ERC-90066 B70-10376 01
An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03
- BROWN, W. L.**
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
- BROWNE, J. C.**
Fortran Automatic Code Evaluation System (FACES)
M-FS-22910 B74-10190 09
- BROWNING, C. W.**
Monel-shot and screen regenerators
GSFC-11593 B73-10462 03
- BROYLES, H. F.**
Dip molding to form intricately-shaped medical elastomer devices
NPO-13535 B75-10238 08
- BRUCE, L. D.**
High-power ac/dc variable load simulator
MSC-14788 B75-10108 02
- BRUMMER, S. B.**
Increased resistance to stress corrosion of aluminum alloys
M-FS-20788 B70-10396 04
Carbon monoxide detector
M-FS-23090 B74-10268 04
- BRYAN, C.**
Autoignition test cell with flexible atmosphere control
KSC-10198 B73-10113 04
- BRYANT, T. D.**
Radio-controlled, sound-operated switch
LANGLEY-11641 B74-10143 03
- BRYANT, W. A.**
Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
LEWIS-11490 B74-10124 04
- BUCHANAN, E.**
Logic controlled solid state switchgear
LEWIS-12044 B73-10408 02
- BUCHANAN, R. A.**
Improved intensifying screen reduces X-ray exposure
AEC-10090 B72-10232 03
- BUCHLE, D. R.**
Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
Uniform high irradiance source
LEWIS-12360 B75-10008 03
- BUCK, A. P.**
Elimination of gases and contamination from water
KSC-10502 B70-10456 05
- BUCK, D. C.**
Microwave diode amplifiers with low intermodulation distortion
GSFC-11668 B75-10213 01
- BUCK, O.**
Flaw detection by mechanical resonant measurement
M-FS-19218 B73-10440 03
- BUCKEY, D. L.**
Flammability control for electrical cables and connectors
M-FS-21584 B73-10235 02
- BUCKLE, K. A.**
Control of nonenzymatic browning in intermediate-moisture foods
MSC-14835 B75-10317 05
- BUCKLEY, D. H.**
Ion plating seals microcracks or porous metal components
LEWIS-11657 B72-10397 04
Scanning-electron-microscope used in real-time study of friction and wear
LEWIS-12448 B75-10064 06

BUCKMAN, R. W., JR.

New tantalum alloy has superior creep resistance and good workability
LEWIS-11130 B71-10010 04

High strength forgeable tantalum base alloy
LEWIS-11386 B75-10023 04

BUCKMANN, P. S.

Turbopump radial and axial rotor support system
M-FS-21495 B72-10264 07

BUE, J. L.

Shielding method for polycrystalline and epitaxy growths
M-FS-20162 B71-10434 04

BUEHLER, D.

Automated Data Management Information System (ADMIS)
KSC-10619 B73-10053 09

BUFFUM, R. D.

Improved calibration of accelerometers at temperatures down to -450 degrees F
M-FS-18561 B70-10173 03

BUGG, F. M.

Effect of wall roughness on liquid oscillations damping in rectangular tanks
M-FS-20799 B70-10388 06

BUGGELE, A. E.

Improved method for reclaiming vacuum diffusion pump oil
LEWIS-11647 B72-10511 04

Diffusion pump modification promotes self-cleansing and high efficiency
LEWIS-12323 B75-10065 06

BUIRGY, P. A.

Cartesian-coordinate dimensioning for plumbing systems
M-FS-18867 B71-10435 08

BULLINGER, H.

Multilayer screen gives cathode ray tube high contrast
ERC-10217 B70-10454 01

BUNA, T.

Analysis of orbital heat transfer
ARC-10842 B74-10115 02

Analysis of orbital heat transfer
ARC-10844 B74-10116 03

BUNCE, R. C.

Automatic carrier acquisition system for phase-lock-loop receivers
NPO-11628 B73-10343 02

BUNTENBACH, R. W.

Two-stage magnetometer measures weak magnetic fields
AEC-10068 B72-10370 01

BUNTON, W. R.

Subroutines for evaluating single and multiple integrals using modified Romberg method
NPO-11718 B71-10138 09

BURCH, J. L.

Two-speed wheel-drive system without lubrication
M-FS-20645 B70-10193 07

Technique for improving hydrodynamic gyro bearings
M-FS-20764 B70-10301 06

Small portable speed calculator
M-FS-22638 B73-10329 07

Self-leveling load table
M-FS-22039 B74-10144 06

BURCHER, E. E.

Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03

Remote control radioactive-waste removal system uses modulated laser transmitter
LANGLEY-10311 B71-10343 03

A transmitting and reflecting diffuser for ultraviolet light
LANGLEY-10385 B72-10611 03

Electro-optical device for monitoring wire size
LANGLEY-11358 B73-10321 02

Automatic focus control for facsimile camera
LANGLEY-11213 B73-10361 02

Viewgraph preparation made easier
LANGLEY-11612 B74-10094 03

BURCHILL, R. F.

A system for early warning of bearing failure
M-FS-21877 B72-10494 06

New detection method for rolling element and bearing defects
M-FS-21911 B72-10689 06

BURGER, B. L.

Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03

BURGESS, T. J.

Laser frequency modulation with electron plasma
AEC-10079 B72-10373 03

BURICK, R. J.

Probe measures gas and liquid mass flux in high mass flow ratio two-phase flows
LEWIS-11270 B72-10546 06

BURKE, B.

Fabrication and repair of graphite/epoxy laminates
M-FS-23228 B75-10164 08

BURKHARD, D. G.

Improved source of infrared radiation for spectroscopy
M-FS-20613 B71-10031 03

BURKS, H. D.

Film mounting method for thermomechanical analysis
LANGLEY-11330 B75-10072 04

BURNETT, G. J.

Concept for a distributed processor computer
ERC-10271 B70-10481 02

BURNHAM, D. C.

Picosecond pulse measurement by two-photon excitation of photographic film
ERC-10227 B70-10377 02

Thermal tuning of organic dye lasers
ERC-10187 B70-10480 02

BURNS, A. E.

Propulsion sizing program
MSC-14016 B72-10605 09

BURNS, E. A.

Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04

Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04

BURNS, R. A.

Ball bearing protector
M-FS-21612 B72-10322 07

BUROWICK, E. A.

Multichannel intercom with simultaneous send/receive capability
M-FS-18808 B71-10228 02

BURR, J. C., JR.

Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03

BURR, K. F.

Thin KAPTON polyimide films vacuum formed at high temperature retain their shape at temperatures to 450 K
LEWIS-12412 B75-10016 04

BURRELL, B. W.

New primers for adhesive bonding of aluminum alloys
M-FS-21387 B71-10488 04

BURROUS, C. N.

Laser beam hydrocarbon detector
ARC-10156 B70-10631 03

A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02

Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 B72-10053 03

Temperature compensation of light-emitting diodes
ARC-10467 B72-10218 01

BURSTEIN, S. Z.

A study of high frequency nonlinear combustion instability in baffled annular liquid propellant rocket motors
NPO-11800 B71-10532 09

BURT, R. W.

Accurate measurement of telemetry performance
NPO-11457 B72-10089 02

BURTON, C. E.

Electrocardiogram signal analyzer
MSC-12710 B75-10269 05

BURTON, G. W.

Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04

BURWELL, D.

Calorimeter measures high nuclear heating rates and their gradients across a reactor test hole
NUC-10227 B70-10356 03

BUSCH, R.

Fabrication of thick structures by sputtering
LEWIS-12331 B74-10126 08

BUSH, J. C.

A continuous physiological data collector
M-FS-20835 B72-10402 05

BUSH, S.

Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 B70-10273 04

BUSHNELL, D.

Computer program for stress, stability, and vibration of complex branched shells of revolution: BOSOR 4
LANGLEY-11209 B74-10205 09

BUTLER, D. R.

Shuttle orbiter storage locker system: A study
JSC-14448 B73-10287 08

BUTLER, R. V.

FORTAN programming - A self-taught course
LANGLEY-10738 B71-10052 09

BUTLER, T. G.

NASTRAN computer system level 12.1
GSFC-10991 B71-10285 09

- BUTMAN, S.**
Interplex modulation and a suppressed-carrier tracking loop for coherent communications systems
NPO-11572 B74-10209 01
- BUTTON, S. L.**
Computer programs for calculating potential flow in propulsion system inlets
LEWIS-12152 B75-10018 09
- BUZZARD, R. J.**
Radial heat flux transformer
NPO-10828 B71-10311 03
- BYER, R. L.**
Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02
- BYERS, D. C.**
Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01
- BYNUM, B. G.**
Multimode ergometer system
M-FS-21044 B71-10107 05
Mobile automatic metabolic analyzer
M-FS-23143 B75-10077 05
- BYRD, N. R.**
Improved thermally conducting electron transfer polymers
GSFC-11304 B72-10291 04
- BYRNE, F.**
Digital servo controller behaves like synchro
KSC-10769 B73-10337 02
- BYRNE, J. J.**
High energy density electrochemical cell
LEWIS-10969 B70-10151 01
- BYXBEE, R. C.**
Thermal heliotrope - A passive sun-tracker
GSFC-10945 B71-10260 03
- C**
- CABEAL, J. A.**
Electromagnetic rheometer
ARC-10525 B72-10416 04
- CADIN, D., JR.**
Response of a panel structure to reverberant acoustic excitation
M-FS-21774 B72-10603 06
- CADY, E. C.**
Main tank injection pressurization program
LEWIS-11368 B72-10069 09
- CAHILL, J. B.**
Testing of brazed and welded connections of stainless-steel tubing
M-FS-20806 B70-10417 08
- CALDER, G. V.**
A method of isolating organic compounds present in water
AEC-10010 B72-10044 04
- CALER, W.**
Method of joining metals of significantly different expansion rates
NPO-12076 B71-10028 08
- CALHOON, D. F.**
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
- CALIHAN, C.**
Laser scribing of silicon wafers
ERC-10386 B70-10437 01
- CALKINS, D. E.**
Anemometer calibrator
M-FS-21424 B71-10519 03
- CALLAWAY, P. W.**
Differential input preamplifier
ARC-10489 B72-10165 01
- CAMARILLO, R. G.**
Helium leak measurements using CO₂ as a carrier
M-FS-21742 B72-10354 03
- CAMBRA, J. M.**
High voltage protection network
ARC-10197 B72-10119 02
- CAMERON, H.**
Hydrogen-oxygen powered internal combustion engine
LEWIS-90264 B70-10610 07
- CAMERON, J. R.**
Determination of bone mineral mass in vivo
MSC-14276 B75-10168 05
- CAMERON, R. E.**
Microflora in soils of desert regions
NPO-11215 B70-10253 05
- CAMP, D. W.**
Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07
- CAMP, F. E.**
High expansion coefficient glasses can be sealed to common metals
LEWIS-10698 B70-10429 08
- CAMPBELL, B. A.**
Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04
- CAMPBELL, E. C.**
Spool for releasing and retracting flat conductor cable
M-FS-20234 B71-10416 08
Folding tool for preparing FCC molded-plug terminations
M-FS-20116 B71-10422 08
Cable insulation cut-through tester
M-FS-20114 B71-10459 08
- CAMPBELL, M. E.**
Research on bearing lubricants for use in a high vacuum
M-FS-22119 B72-10469 04
Lubrication handbook
M-FS-22326 B73-10062 04
- CAMPBELL, R.**
Technical management techniques for identification and control of industrial safety and pollution hazards
M-FS-21883 B72-10588 05
- CAMPBELL, R. D.**
Error-correcting codes for high-speed digital computers
M-FS-22887 B74-10147 02
- CAMPBELL, W. E.**
Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07
- CAMPEN, C. F., JR.**
Automated drug identification system
NPO-13063 B74-10213 05
Liquid sample processor
NPO-13136 B74-10278 05
- CANADY, K. S.**
Thin film devices used as oxygen partial pressure sensors
XLA-06473 B70-10419 04
- CANCRO, C. A.**
Wide-range pulse-height discriminator
GSFC-10837 B70-10053 01
- Switching circuits with fast response and low power drain
GSFC-10878 B70-10250 01
- CANICATTI, C. L.**
Voltage monitoring system
KSC-10736 B75-10154 02
- CANNING, T. N.**
Bimetallic devices for stirring fluids
ARC-10441 B73-10029 06
- CANNON, W. A.**
Oxygen carrier for gas chromatographic analysis of inert gases in propellants
ARC-10574 B72-10249 04
- CANNULI, V. M.**
Formation of internally-confined semiconductor lasers
LANGLEY-11770 B75-10299 08
- CANRIGHT, R. B., JR.**
Computer program draws three-dimensional surfaces
LEWIS-10482 B72-10253 09
- CANTLEY, R. B.**
Radial honeycomb core
ARC-10727 B73-10340 08
- CANTWELL, W.**
Tandem wheel drop-legs for standard truck trailer
M-FS-13466 B70-10088 07
- CAPLETTE, R. K.**
Constant-voltage drive current-steering switch
NPO-10743 B70-10046 01
- CARD, D. H.**
Method of identifying clusters representing statistical dependencies in multivariate data
ARC-10744 B75-10140 09
- CARDEN, A. E.**
Repeatable method of thermal stress fracture test of brittle materials
NUC-11019 B72-10258 06
- CARDEN, J. R.**
Flat-conductor cable has rotary and linear flexibility
M-FS-21096 B71-10242 01
- CARDWELL, R. O.**
Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 B70-10540 04
- CAREY, C.**
Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
- CARL, C. C.**
Single-channel digital command-detection system
NPO-11302 B73-10342 02
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
- CARL, G. L.**
Automated data acquisition and reduction system for torsional braid analyzer
LANGLEY-11578 B75-10073 02
- CARLE, G. C.**
Automatic amino acid analyzer
ARC-10215 B71-10165 04
Simple gas chromatographic system for analysis of microbial respiratory gases
ARC-10403 B72-10207 03
Soil moisture by extraction and gas chromatography
ARC-10748 B73-10503 04

- CARLIN, A. H.**
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
- CARLSON, L. W.**
Improved insulating materials effective at extremely high temperatures
NPO-12067 B71-10289 04
Accurate thickness measurement of easily compressed materials
ARC-10551 B74-10111 04
- CARLUCCI, J., JR.**
Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
- CARMIN, D. L., JR.**
Inexpensive anti-fog coating for windows
MSC-13530 B71-10149 04
- CARNEVALE, E. H.**
Ultrasonic propagation in gases at high temperatures
HQ-10498 B70-10137 03
- CARON, P. R.**
Phase interpolation circuits using frequency multiplication for phased arrays
ERC-10285 B70-10457 02
Phased-array antenna phase control circuit using frequency multiplication
ERC-10285 B74-10251 01
Logarithmic-function generator
ERC-10267 B74-10285 02
- CARPENTER, B.**
Patient's breath controls comfort devices
LANGLEY-11138 B72-10533 05
- CARPENTER, B. L.**
Portable light detection system for the blind
M-FS-22403 B73-10099 05
- CARPENTER, H. W.**
Heat-barrier coatings for combustion chambers
M-FS-18618 B70-10363 07
Simple bonding technique for high-temperature ceramic coatings
LEWIS-11085 B70-10580 08
Granular two-phase insulation systems
NPO-12068 B71-10290 04
- CARPENTER, J. L., JR.**
Life prediction of materials exposed to monotonic and cyclic loading: A technology survey and bibliography
LEWIS-12502 B75-10138 03
Fracture toughness testing data: A technology survey and bibliography
LEWIS-12503 B75-10139 03
- CARPINI, T. D.**
Gage for measuring coastal erosion and sedimentation
LANGLEY-10779 B70-10629 01
- CARR, T.**
Eight-channel telephone telemetry system
JSC-14452 B73-10320 05
- CARRIKER, J. W.**
Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 B70-10653 07
Combination throttle and shutoff valve
M-FS-21513 B72-10287 07
- CARROLL, C. C.**
Two techniques for digital filter design
M-FS-20015 B70-10314 01
- CARROLL, C. E.**
Electrical grounding bracket
ARC-10041 B72-10045 01
- CARSON, W. N., JR.**
Electrodeposited inorganic separators for alkaline batteries
GSFC-10943 B70-10462 01
- CARTER, A. F.**
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
- CARTER, E. S.**
Twistable mold for helicopter blades
ARC-10682 B72-10432 08
- CARTER, P. D.**
New concept in brazing metallic honeycomb panels
LANGLEY-10957 B73-10358 08
- CARTIER, D. E.**
Power spectrum analysis of staggered quadriphase-shift-keyed signals
MSC-14865 B75-10318 09
- CARUSO, A. J.**
Sorption vacuum trap
ERC-90051 B70-10449 06
Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
GSFC-11860 B73-10516 03
- CARUSO, S. V.**
Specification guidelines for hybrid microcircuits
M-FS-22090 B72-10474 01
A new packaging and testing concept for microelectronic components
M-FS-20936 B73-10109 01
- CARUSO, V. P.**
Mechanical rod peening
M-FS-23047 B74-10237 07
- CASAD, T. A.**
Instrument for measuring thin-film belt lengths
NPO-13149 B73-10455 06
- CASE, E. W.**
Wide-angle, circularly polarized, omnidirectional-array antenna
GSFC-10928 B71-10033 01
- CASELDINE, H.**
Lightweight, high-strength, reinforced plastic tube-framing die
LANGLEY-10126 B70-10273 04
- CASEY, W. L.**
Viewfinder/tracking system for Skylab
MSC-14407 B75-10040 03
- CASHION, W. F.**
Improved methods of forming monolithic integrated circuits having complementary bipolar transistors
LANGLEY-10358 B71-10035 01
- CASSIDY, J. F.**
Measurement of surface roughness slope
LEWIS-11080 B70-10722 01
- CASTLE, J. G.**
Improved electrodes for skin contacts
M-FS-21926 B72-10698 05
- CASTLE, K. D.**
Response of tantalum capacitors to fast transient overvoltages
MSC-14822 B75-10274 01
- CATER, W. C.**
Techniques for improving reliability of computers
M-FS-21326 B72-10109 02
- CATHERINES, D. S.**
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
- CATLEDGE, C. G.**
Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
- CATTABRIGA, R. A.**
Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
- CAUDILL, L.**
LEAPS (Laser electro-optical alignment pole for surveying)
GSFC-11262 B73-10122 02
- CAUSTIN, E. L.**
Nondestructive sonic testing of adhesive-bonded composites
M-FS-20793 B70-10397 08
- CAVANO, P. J.**
Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
LEWIS-12366 B75-10066 04
- CAVICCHI, R. H.**
Critical speed analysis of rotors
LEWIS-11061 B70-10288 06
- CEA, E. J.**
Automated preventive maintenance program
GSFC-11408 B71-10500 09
- CELINO, V. A.**
Cell for electrolysis of water vapor
ARC-10521 B72-10166 03
- CELLIER, A.**
Signal conditioner circuit for photomultiplier tube
XLA-10773 B70-10096 01
- CERINI, D. J.**
Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06
- CESSNA, J. R.**
RC filter with low distributed capacitance provides 60 db isolation at 500 MHz
GSFC-10983 B70-10664 02
- CETAS, T. C.**
Low temperature scale for a 1 to 20 degree Kelvin region
AEC-10007 B72-10146 03
- CHACKERIAN, C., JR.**
Detection of nitric oxide pollution
ARC-10709 B73-10018 03
- CHAMBELLAN, R. E.**
Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03
- CHAMBERLAIN, D.**
Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
- CHAMBERLAIN, R. G.**
Separation of two bodies in space
NPO-10663 B70-10625 09
- CHAMBERLAIN, W. W., II**
Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
- CHAMBERS, A. B.**
Psychrometric chart for physiological research
ARC-10394 B71-10470 03
- CHAMBERS, C. M.**
Seating tool for preparing molded-plug terminations on FCC
M-FS-20123 B71-10417 08

- Durability tester for FCC connectors
M-FS-20128 B71-10418 08
Sprue cutoff tool for molded FCC plugs
M-FS-20236 B71-10421 08
Folding tool for preparing FCC
molded-plug terminations
M-FS-20116 B71-10422 08
Apparatus tests flexural durability of
FCC
M-FS-20113 B71-10458 08
Cold-blade stripper for polyimide and TFE
insulation on FCC
M-FS-20115 B71-10460 08
Hot-blade stripper for polyester insulation
on FCC
M-FS-20117 B71-10461 08
Rotary stripper for shielded and
unshielded FCC
M-FS-20119 B71-10465 08
Slitting flat conductor cables with the
single cutting edge slitter
M-FS-20111 B72-10575 07
- CHAMIS, C. C.**
Bonding of strain gages to fiber
reinforced composite plastic materials
LEWIS-11151 B70-10630 01
Analysis of multilayered fiber
composites
LEWIS-11347 B71-10372 09
Equations to assess the impact resistance
of fiber composites
LEWIS-11486 B72-10503 04
Fiber composite materials: A survey of
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LEWIS-11924 B73-10007 04
An inexpensive and effective method for
calculating the strength of randomly
reinforced fiber composites
LEWIS-11985 B73-10039 04
Residual stress effects on the impact
resistance and strength of fiber
composites
LEWIS-11984 B73-10063 04
Computer program to compute buckling
loads of simply supported anisotropic
plates
LEWIS-11961 B73-10247 09
Criteria for selecting resin matrices for
improved composite strength
LEWIS-12057 B74-10005 04
Advanced fiber-composite hybrids--A
new structural material
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- CHAMPINE, R. A.**
New aircraft instrument indicates
turbulence intensity
LANGLEY-11833 B75-10227 03
- CHAMPMAN, J. W.**
High expansion coefficient glasses can
be sealed to common metals
LEWIS-10698 B70-10429 08
- CHAN, S. P.**
A topological approach to
computer-aided sensitivity analysis
ARC-10214 B71-10164 02
Graphical method for analyzing digital
computer efficiency
ARC-10210 B71-10453 09
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Glass fiber addition strengthens
low-density ablative compositions
LANGLEY-11288 B74-10027 04
- CHANDLER, M. W.**
Exhaust cloud rise and diffusion in the
atmosphere
M-FS-21119 B71-10111 03
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metals
M-FS-18612 B70-10162 04
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Ti-6Al-4V and Inconel-718 by high pressure
hydrogen
M-FS-18753 B70-10364 04
Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
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metals: A study
M-FS-22540 B73-10168 04
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in enriched oxygen atmospheres
MSC-14618 B74-10154 04
- CHANG, C. J.**
Articulated elastic-loop roving vehicles
M-FS-22691 B73-10326 06
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Nonlinear damping in structures
M-FS-20701 B70-10341 03
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technique
ARC-10495 B72-10022 06
Improved audio reproduction system
ARC-10404 B72-10059 01
Two-directional active damper
LANGLEY-11815 B75-10259 06
- CHAPELLE, E. W.**
Rapid method for determination of
antimicrobial susceptibilities pattern of
urinary bacteria
GSFC-12039 B75-10253 05
- CHAPMAN, C. P.**
Peak acceleration limiter
NPO-10556 B72-10007 01
Computer-controlled vibration testing
NPO-11612 B73-10138 02
Automatically-focusing microscope
system for live tissue observation
NPO-13215 B75-10048 03
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superalloys and refractory metals
LEWIS-10700 B70-10430 08
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measure of urinary tract infection
GSFC-11092 B71-10051 05
Automatic bio-sample bacteria detection
system
GSFC-11169 B71-10055 04
- CHARLES, J. F.**
High-strength rivet does not require
aging
MSC-19301 B75-10044 06
- CHARLTON, K. W.**
An electrothermally actuated micro
valve
NPO-10730 B70-10171 07
- CHASE, W. D.**
Virtual-image display system for flight
simulators
ARC-10175 B71-10427 03
- CHELSON, P. O.**
Reliability computation from reliability
block diagrams
NPO-13304 B75-10276 07
- CHEN, A. B.**
Design procedure for low-drag subsonic
airfoils
LANGLEY-11351 B75-10256 03
- CHEN, C. J.**
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NPO-13348 B75-10123 03
Laser using lead chloride vapor
NPO-13615 B75-10128 03
- CHEN, D.**
Manganese bismuth thin film for large
capacity digital memories
M-FS-21246 B72-10107 03
- CHEN, J. C.**
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materials under thermal and pressure
loading
NPO-11727 B73-10301 09
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cylinders
NPO-11736 B73-10302 09
- CHEN, M. M.**
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of revolution (SALORS): Linear stress
analysis option
LANGLEY-11569 B74-10186 09
- CHEN, T. T.**
Stripe-line coil for magnetic-field
generation in bubble memory devices
LANGLEY-11705 B75-10195 01
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bubble memory
LANGLEY-11707 B75-10196 01
Bubble-domain circuit wafer evaluation
coil set
LANGLEY-11728 B75-10197 01
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bubble-memory-device packaging
LANGLEY-11704 B75-10219 01
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LANGLEY-11765 B75-10221 01
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LANGLEY-11766 B75-10222 01
- CHEN, W.**
An economical arterial-pulse-wave
transducer
GSFC-11531 B73-10046 05
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Improved plasma accelerator
ARC-10109 B71-10454 03
Control of oscillations in a discharge
circuit
ARC-10556 B72-10304 01
Reversed cowl-flap thrust augmentor
ARC-10754 B74-10046 06
Probe for measuring turbulent real-time
shear-stress waves
ARC-10755 B74-10072 03
- CHEO, P. K.**
Efficient wire-grid duplexer-polarized for
CO₂ lasers
GSFC-11403 B72-10440 03
- CHERN, S. S.**
Improved chemical vapor-deposition
reactor
NPO-13650 B75-10212 08
- CHERNOFF, R. C.**
Arc protection system for high-power RF
amplifiers
NPO-11560 B72-10099 02
- CHEVALIER, J. L.**
Study of hot hardness characteristics of
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LEWIS-11785 B72-10583 04
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LEWIS-11940 B73-10008 07

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Hydrodynamic squeeze-film bearings for gyroscopes
M-FS-20802 B70-10389 07
- CHIAO, R. Y.**
Transmission of optical frequencies with minimal losses
HQ-10541 B72-10389 03
- CHILD, F. T.**
Electrodes for sealed secondary batteries
ARC-10238 B72-10050 02
- CHILDRESS, J. D.**
New tooth enamel from brushite crystals
ERC-10338 B74-10199 05
- CHILDS, G. E.**
Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
- CHIN, J.**
Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04
- CHISUM, W. J.**
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07
- CHOI, S. D.**
High-power microstrip switch
NPO-11965 B73-10451 02
- CHOW, T. S.**
Standardization and qualification of computer programs for circuit design
M-FS-21537 B72-10142 09
- CHRISTENSEN, J. L.**
Intensive care alarm system
GSFC-11377 B73-10126 02
- CHRISTIAN, J. D.**
Accurate measurement of gas volumes by liquid displacement
ARC-10723 B72-10699 03
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ARC-10881 B74-10175 04
Apparatus for study of plasmas at elevated temperatures
ARC-10958 B75-10285 03
- CHU, R.**
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MSC-15829 B75-10172 09
- CHU, R. T.**
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M-FS-21119 B71-10111 03
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Low-Cost thin-layer silicon solar cells
GSFC-12023 B75-10293 04
- CIKANEK, H. A., JR.**
Optical probing of supersonic aerodynamic turbulence
M-FS-20686 B70-10665 03
- CIMERMAN, I.**
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
- CISCO, T. C.**
Design of microstrip components by computer
LANGLEY-11210 B72-10741 01
- CIZEK, G. J.**
Built-in bleeder system in laminated plastic structures
MSC-17713 B72-10562 08
- CLARK, A. F.**
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Development of a polyimide for use as a temperature and solvent resistant sealant
M-FS-21325 B72-10262 04
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HQ-10179 B70-10254 05
- CLARK, G. A.**
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M-FS-21916 B72-10353 04
- CLARK, H. L.**
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M-FS-21877 B72-10494 06
- CLARKE, J. F. G., JR.**
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M-FS-21113 B72-10321 04
- CLATTERBUCK, C.**
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GSFC-11358 B72-10280 04
RF shielded connectors
GSFC-11215 B73-10509 01
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NPO-10678 B70-10033 01
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NPO-11437 B73-10293 02
Transmission line for S-band masers
NPO-13504 B75-10126 03
Reflected-wave maser
NPO-13490 B75-10279 03
- CLAWSON, G. T.**
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GSFC-11600 B73-10128 06
- CLAYTON, R. M.**
Experimental verification of computer spray-combustion models
ARC-10689 B73-10031 03
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NPO-11847 B72-10186 01
- CLEMENTS, P. A.**
Stable group delay cable
NPO-13138 B74-10295 01
- CLEMONS, J. M.**
Thin film thermoelectric devices as thermal control coatings: A study
M-FS-21384 B73-10153 04
- CLEMONS, P. W.**
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M-FS-22133 B73-10098 07
- CLEVELAND, G. J.**
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JSC-14321 B73-10146 02
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JSC-14180 B73-10236 02
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LANGLEY-10543 B71-10126 02
System for measuring passenger reaction to transportation-vehicle vibration
LANGLEY-11353 B73-10436 05
- CLEW, R. D.**
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KSC-10522 B70-10680 03
- CLIFF, R. A.**
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GSFC-10517 B71-10322 01
- CLIFFORD, J. E.**
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ARC-10316 B71-10231 01
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ARC-10339 B73-10016 03
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Nondestructive testing of bond integrity in foam insulation/aluminum composites
M-FS-20786 B71-10507 06
Nondestructive testing of railroad wheels and rails by ultrasonics
M-FS-23086 B74-10238 06
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Growth of single-crystal gallium nitride
ERC-10301 B70-10473 03
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ERC-10303 B70-10474 01
P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
- CLURMAN, S. P.**
Simple two-speed tape transport drive
GSFC-10981 B71-10409 06
- COBIN, J. C.**
High-powered automatic latching device
MSC-15474 B70-10198 07
- COCKS, F. H.**
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M-FS-20788 B70-10396 04
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LEWIS-11844 B73-10316 04
- COE, H. H.**
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LEWIS-10856 B70-10468 07
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LEWIS-11152 B71-10173 07
- COFFIN, R. C.**
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NPO-11663 B72-10185 01
- COFFINBERRY, G. A.**
Fluid insulation to prevent ice formation in heat exchangers
LEWIS-11959 B73-10028 06
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Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02
Statistical analysis tables for truncated or censored samples
M-FS-21024 B71-10351 03
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Controlled flow assembly
M-FS-21716 B72-10404 07
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NPO-11147 B70-10086 02

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Computer program for stress, vibration, and buckling characteristics of general shells of revolution
LANGLEY-11369 B73-10363 09
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HQ-10628 B72-10652 05
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Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01
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ARC-10498 B72-10023 09
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Fuse and switch functions combined within a single housing
HQ-10497 B70-10003 01
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HQ-10452 B70-10021 01
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NPO-11853 B75-10174 04
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MSC-13697 B71-10304 01
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GSFC-11668 B75-10213 01
- COLBURN, M.**
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GSFC-11169 B71-10055 04
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Computer system for monitoring radiorepirometry data
ARC-10784 B73-10494 05
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ARC-10154 B71-10284 09
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GSFC-11499 B72-10600 09
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Inorganic glass ceramic slip rings
M-FS-20711 B72-10313 04
- COLEMAN, J.**
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LEWIS-12007 B73-10213 04
- COLEMAN, L. F.**
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ARG-10243 B70-10045 01
- COLEMAN, R. L.**
Portable automatic blood analyzer
MSC-14627 B75-10041 05
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New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
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LEWIS-11726 B73-10044 04
- COLKER, C.**
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LEWIS-10256 B71-10100 07
- COLLINS, E. R., JR.**
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NPO-10671 B72-10712 06
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Design and evaluation of brushless electrical generators
LEWIS-10124 B70-10554 02
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Model optimization using statistical estimation
M-FS-22873 B74-10189 09
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GSFC-11540 B73-10073 09
- COLOMBO, G. V.**
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ARC-10797 B74-10053 04
- CONE, C. D., JR.**
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LANGLEY-10184 B70-10728 07
- CONEL, J. E.**
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NPO-11702 B73-10140 03
- CONLEY, T. A.**
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LEWIS-12065 B73-10251 03
- CONGDON, W. M.**
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ARC-10949 B75-10144 04
- CONLEY, J. M.**
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NPO-11634 B72-10609 02
Magnetic latching valve
NPO-11790 B73-10026 06
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M-FS-21113 B72-10321 04
- CONNOLLY, J. P.**
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ARC-10302 B72-10298 05
- CONNORS, J.**
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LEWIS-12559 B75-10241 07
- CONOVER, M. F.**
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MSC-14126 B72-10391 05
- CONRAD, E. W.**
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LEWIS-11219 B70-10618 04
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LEWIS-11231 B71-10219 07
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LEWIS-11217 B71-10222 07
- CONRAD, W. M.**
Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
- CONRADI, M. S.**
Transmission Oscillator Ultrasonic Spectrometer (TOUS): A new research instrument
LANGLEY-11735 B75-10035 03
- CONRAGAN, J.**
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HQ-10548 B70-10157 01
- CONROY, B. L.**
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NPO-13630 B75-10237 03
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GSFC-10943 B70-10462 01
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NPO-11586 B73-10020 04
- COOK, C. H.**
A linear circuit analysis program with stiff systems capability
LANGLEY-11184 B73-10091 09
- COOK, G. R.**
Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
- COOK, J. E.**
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ARC-10423 B72-10125 05
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M-FS-22896 B73-10528 08
- COOKE, W. A.**
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ARC-10070 B71-10162 01
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ARC-10064 B71-10204 01
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ARC-10025 B71-10497 01
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ARC-10073 B72-10268 01
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HQ-10389 B70-10108 03
- COOLEY, C. G.**
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M-FS-21024 B71-10351 03
- COOMBE, J. R.**
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NUC-10227 B70-10356 03
- COOMBS, D. S.**
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LANGLEY-11604 B74-10031 07
- COON, G. W.**
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ARC-10711 B75-10025 01
- COOPER, C. W.**
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M-FS-20458 B71-10310 04
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M-FS-19004 B72-10407 06
- COPELAND, C. S.**
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ARC-10660 B72-10414 07
- COPELAND, E. J.**
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MSC-15635 B70-10307 06

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MSC-17153 871-10097 04
- COPELAND, J. T., JR.**
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KSC-10294 870-10229 01
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Space-suit carbon dioxide absorption system: A concept
ARC-10546 872-10168 05
- COPPER, W. P.**
Foam-machining tool with eddy-current transducer
M-FS-23298 875-10309 08
- COPPS, E. M.**
Microprogram scheme for automatic recovery from computer error
MSC-13387 870-10642 09
- CORBETT, A. B.**
Apparatus for cutting elastomeric materials
NPO-13146 873-10521 07
- CORBETT, R. L.**
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ARC-10661 872-10415 05
- CORK, L. Z.**
Airlock caution and warning system
M-FS-21576 872-10467 02
- CORNSEWET, T. N.**
Automatic optometer operates with infrared test pattern
ARC-10095 870-10401 05
Visual focus stimulator aids in study of the eye's focusing action
ARC-10049 870-10568 05
Fast signal averager
ARC-10090 874-10109 02
- CORNWELL, D. F.**
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M-FS-23200 875-10265 02
- CORRAL, J. S.**
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M-FS-16326 872-10104 06
- CORRIE, B. L.**
Development of chip passivated monolithic complementary MISFET circuits with beam leads
M-FS-22264 872-10696 01
- CORUM, C. C.**
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M-FS-20123 871-10417 08
- CORWIN, R. R.**
Automated electronic system for measuring thermophysical properties
LANGLEY-11883 875-10160 03
- COSENTINO, L. S.**
Page composer to translate binary electrical data to optical form
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KSC-10662 871-10272 03
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LANGLEY-11607 874-10178 02
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ARC-10531 872-10028 04
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M-FS-21735 872-10470 07
- COUVILLON, L. A.**
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NPO-11338 870-10355 02
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NPO-11132 871-10307 02
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NPO-11302 873-10342 02
- COVENTRY, J. H.**
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MSC-15624 870-10547 07
- COWFER, C. D.**
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NUC-10211 870-10533 01
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MSC-17848 872-10677 06
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LEWIS-11804 872-10673 01
- CRAMER, H. E.**
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NPO-11502 872-10092 01
Inertial reference unit
NPO-11518 872-10094 02
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NPO-11499 872-10555 01
- CRAWFORD, W. E.**
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NPO-11341 872-10080 01
- CREEL, T. R., JR.**
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LANGLEY-11883 875-10160 03
- CREMER, H. C.**
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NPO-11055 870-10076 01
- CRESS, S. B.**
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ARC-10330 872-10056 01
- CRIBB, H. E.**
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XKS-08485 870-10016 01
Self-contained miniature electronics transceiver provides voice communication in hazardous environment
KSC-10164 870-10335 01
Lightweight S-band helix antenna
KSC-10392 870-10538 02
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KSC-10855 874-10028 06
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ARC-10773 873-10378 03
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ARC-10774 873-10379 03
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GSFC-10993 871-10346 01
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GSFC-10994 871-10347 01
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GSFC-11253 872-10129 04
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ARC-10769 873-10377 05
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ARC-10864 875-10058 06
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MSC-15646 870-10041 08
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ERC-10463 870-10269 03
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M-FS-18178 872-10488 06
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ARC-10405 872-10060 01
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M-FS-20824 870-10514 08

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M-FS-15115 870-10172 01
- CROUCH, R. K.**
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LANGLEY-11144 873-10056 04
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LEWIS-11237 872-10405 09
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LEWIS-11809 873-10244 09
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LEWIS-12325 875-10021 09
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NPO-10709 870-10393 01
Frequency discriminator/phase detector
NPO-11515 874-10098 02
Third-order phase-locked loop receiver
NPO-11941 874-10104 02
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Antenna-array, phase quadrature tracking system
MSC-12205 870-10095 02
- CULLER, V. H.**
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NPO-13643 875-10211 05
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M-FS-22697 874-10145 09
- CURREN, A. N.**
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LEWIS-11222 870-10655 01
- CURRERI, J. S.**
Low frequency sinusoidal pressure generator
LEWIS-11465 872-10477 01
- CURREY, N. S.**
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ARC-10771 873-10502 06
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Pseudotachometer for mobile metabolic analyzer
M-FS-22909 873-10480 02
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M-FS-23143 875-10077 05
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M-FS-18921 871-10013 01
- CURTIS, D. A.**
Improved optical filters for automated visual inspection
HQ-10720 872-10521 03
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Reproductive cell separation: A concept
M-FS-22627 873-10198 05
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HQ-10563 870-10032 02
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LEWIS-11595 872-10385 07
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NPO-13645 875-10281 02
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M-FS-23140 875-10095 06
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LANGLEY-11578 875-10073 02
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M-FS-22054 873-10090 04
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NPO-11750 873-10303 09
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XLA-08493 870-10192 01
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Electromechanical hand incorporates touch sensors and trigger function
M-FS-20812 870-10348 07
Zero-g simulation system for therapeutic application
M-FS-14671 871-10034 04
Improved orthopedic arm joint
M-FS-21611 871-10485 05
- Advanced action manipulator system (ADAMS)
M-FS-22022 873-10204 07
A proposed hand-tool assembly for robots
M-FS-22266 873-10216 07
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Sprag solenoid brake
M-FS-21846 872-10669 06
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Standard environmental testing practices
NPO-11567 872-10101 02
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ARC-10496 872-10010 06
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GPEDIT
GSFC-11308 872-10620 09
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LANGLEY-11596 874-10236 09
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HQ-10683 872-10327 03
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M-FS-15081 870-10603 09

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M-FS-14804 B71-10376 09
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NPO-11202 B70-10170 07
Squib-actuated disconnect device
NPO-11544 B72-10097 06
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A cable stabilizer for outdoor elevators
KSC-10513 B72-10283 07
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NPO-10755 B70-10090 07
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M-FS-22910 B74-10190 09
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LEWIS-10905 B71-10398 09
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Ultraviolet interferometer
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Computer program for the design of toroidal transformers
LEWIS-11878 B73-10214 09
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M-FS-18561 B70-10173 03
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LEWIS-11208 B70-10628 03
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ARC-10429 B71-10481 07
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Precision full-wave rectifier
ARC-10101 B70-10161 02
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LEWIS-11879 B73-10014 04
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M-FS-20933 B72-10156 01
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Comparison of release torques of tightened bolts in vacuum and air
M-FS-20773 B70-10395 06
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M-FS-22168 B73-10061 06
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LEWIS-10894 B71-10508 09
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NPO-13055 B74-10212 03

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M-FS-14510 B70-10257 09
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M-FS-21469 B72-10319 07
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High-strength magnetic materials
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JSC-14378 B73-10219 09
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M-FS-23193 B75-10102 01
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M-FS-18804 B70-10365 01
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XAC-10768 B72-10170 03
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ARC-10308 B72-10198 03
Redirecting electromagnetic beams through wide angles
ARC-10602 B72-10307 03
A simple tachometer circuit
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ARC-10364 B72-10691 01
Improved format for radiocardiographic data
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Modulated hydrogen-ion flame detector: A concept
ARC-10322 B74-10071 03
Integrated structure vacuum tube: A Concept
ARC-10445 B74-10110 01
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Regulator for intravenous feeding
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LEWIS-11001 B71-10407 06
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M-FS-15134 B71-10011 01

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HQ-10266 B70-10054 04
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M-FS-21244 B73-10210 03
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KSC-10619 B73-10053 09
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NPO-13245 B74-10284 02

EDGE, T. M.
Interactive graphical computer-aided
design system
M-FS-23157 B75-10096 01

EDGERLEY, R. H.
Salt stabilizer for preventing chlorine
depletion and increasing shelf-life of potable
water - A concept
MSC-17153 B71-10097 04
Estimating carbon monoxide exposure
MSC-17211 B71-10319 04

EDIGHOFFER, H.
Evaluation of omniweave reinforcement
for composite fabrication
M-FS-20946 B71-10245 04

EDMISTON, W. B.
Metal drilling with portable hand drills
M-FS-15180 B70-10594 08

EDWARDS, D. K.
Computer integration of hydrodynamics
equations for heat pipes
GSFC-12009 B75-10252 09

EDWARDS, R. N.
High temperature circuit breaker
LEWIS-90265 B70-10721 01

EDWARDS, V. E.
Analytical methods for bacterial kinetics
studies
LRL-10011 B71-10192 05

EGAN, G. F.
Predicting service life margins
M-FS-24015 B71-10194 06

EGENDORF, F. L.
Determination of radiation interchange
factors
MSC-13475 B71-10295 09

EGGER, R. L.
High-temperature capacitive strain
measurement system
FRC-10053 B75-10069 01

EGLI, W. H.
Dynamic valve to supply constant total
thrust to two orifice jets
ARC-10239 B72-10120 07

EHRET, R. M.
Pictorial display of materials and
processes aids in fabricating complex
assemblies
M-FS-24006 B71-10341 01

EICHENBRENNER, F. E.
Fatigue testing device
LANGLEY-10426 B73-10047 07

EKLUND, B. D.
An ampere-hour meter for batteries
M-FS-22067 B73-10118 02

EL-SUM, H. M. A.
High-directivity acoustic antenna
ARC-10789 B74-10050 02

ELACHI, C.
Acoustically controlled integrated laser
for communications systems
NPO-13175 B75-10047 03
Laser action generated within a light
pipe: A concept
NPO-13531 B75-10127 03
Diffused guides for distributed-feedback
lasers
NPO-13544 B75-10206 03

ELAM, R. C.
Advanced protective coating for
superalloys
LEWIS-11473 B72-10150 04

ELAM, R. M., JR.
Method for casting polyethylene pipe
ARC-10706 B73-10032 08
Cushion module for stowing electronic
equipment
ARC-10779 B74-10073 04

ELIASON, J. T.
Silicon-fiber blanket solar-cell array
concept
M-FS-22458 B73-10374 01
Zener-regulated solar array/battery
power system
M-FS-23195 B75-10162 02

ELKINS, W.
Convuluted fabric for full-pressure
gloves
ARC-10529 B72-10215 04
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05

ELLEMAN, D. D.
Resonant chambers for suspending
materials in air
NPO-13263 B75-10050 03

Heat-operated cryogenic electrical
generator
NPO-13303 B75-10116 03

ELLENBURG, G. W.
Test fixture insures high degree of
accuracy in flexure tests
NUC-10246 B70-10358 07

ELLIOTT, D. G.
Separation of gas from liquid in a
two-phase flow system
NPO-11556 B73-10383 03

ELLIOTT, D. H.
Flexible thermal device
M-FS-21630 B72-10612 04

ELLIOTT, J. J.
Digital program analyzes supersonic flow
field within bell-shaped rocket nozzles
M-FS-14292 B70-10597 09

ELLIS, D. R.
Integrated flight controller for light
aircraft
ARC-10456 B72-10213 06

ELLIS, J. N.
Design and evaluation of brushless
electrical generators
LEWIS-10124 B70-10554 02

ELLISON, A. M.
Wind tunnel buffet load measuring
technique
ARC-10495 B72-10022 06

ELSER, M. J.
Volumetric leak detector
MSC-11325 B70-10302 07

EMMONS, W. F.
Low-temperature radiation-resistant
material for ball-bearing retainers
NUC-10058 B70-10576 04

ENDICOTT, D. L.
Improved lip seal for rotating shafts
LEWIS-11602 B72-10672 07

ENGEL, A.
Operational slope-limiting circuit
NPO-11773 B73-10346 01

ENGLAND, C.
Acid/alkali bromide secondary battery
NPO-13237 B75-10324 01

ENGLE, A.
Digital video display system
NPO-11342 B73-10132 02

ENGLUND, D. R.
Dynamics of short pressure probes
LEWIS-11293 B71-10374 09

ENGLUND, R., JR.
Sinusoidal-pressure generator for testing
dynamic pressure probes
LEWIS-11094 B70-10352 06

ENINGER, J. E.
Computer integration of hydrodynamics
equations for heat pipes
GSFC-12009 B75-10252 09

ENSMINGER, D.
Noncontacting devices to indicate
deflection and vibration of turbopump
internal rotating parts
M-FS-22678 B73-10518 06

EPPLER, W. G.
Table-lookup algorithm for pattern
recognition: ELLTAB (Elliptical Table)
MSC-14866 B75-10236 03

EPSTEIN, P.
A rapid, precise, reciprocating-movement
color filter system
GSFC-11255 B72-10497 07

ERBE, C. J.
Volume-checking tool
KSC-10514 B70-10502 07

ERICKSON, A. C.

Two-phase, passive separator-and-filter assembly
LANGLEY-10976 B74-10133 04

ERICKSON, A. L.

Simple method for forming thin-wall pressure vessels
ARC-10511 B72-10025 08

ERNST, C.

Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09

ERWIN, G., JR.

Braze alloys for high temperature service
LEWIS-11374 B73-10205 06

ERWIN, L. R.

Method of stabilizing fluoric vortex valves and vortex amplifiers
LEWIS-10553 B70-10668 07
A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06

ESKER, D. W.

Vented vectoring-nozzle for STOL and V/STOL aircraft
ARC-10839 B74-10058 06

ESMOND, F. G.

Reliability analysis based on operational success criteria
ARC-10490 B72-10214 09

ESPY, P. N.

High density plasma gun generates plasmas at 190 kilometers per second
M-FS-20589 B71-10383 03

ESTES, M. F.

Synthesis of diamonds
M-FS-20698 B70-10513 08

ETTER, R. J.

An investigation of tandem-row, high-head pump inducers
M-FS-21139 B71-10152 07

EUGENE, K. T.

Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 B73-10258 08

EVANGELISTA, J. A.

A new concept for joining dissimilar composites
M-FS-24307 B73-10148 04

EVANS, D.

Autoignition test cell with flexible atmosphere control
KSC-10198 B73-10113 04

EVANS, D. B.

Radioisotope heater
ARC-10791 B74-10051 03

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Computation of group table alphanumeric display
LEWIS-11346 B71-10373 09

EVANS, G. A.

Laser action generated within a light pipe: A concept
NPO-13531 B75-10127 03

EVANS, J.

Millimeter-wave antenna system
GSFC-10949 B73-10333 01
Improved syncom-type fluid damper
GSFC-11205 B73-10478 06

EVANS, J. C., JR.

Solar cell power scanner
LEWIS-11280 B71-10223 02

EVANS, R. C.

Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 B73-10411 02

Lightweight orthotic braces

LANGLEY-11894 B75-10303 05

EVEN, S.

A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01

EVENSEN, D. A.

Vibration analysis by time-average holography
LANGLEY-10614 B71-10333 03
Vibration measurement by pulse differential holographic interferometry
LANGLEY-11092 B73-10075 03

EVENSEN, H. A.

Improvement of adhesive-bonded structural joints
M-FS-20876 B70-10663 08

Promising born/graphite/resin composites
M-FS-21126 B71-10217 04

EWASHINKA, J. G.

Lightweight protective clothing for the safe handling of high-intensity pressurized lamps
LEWIS-12073 B75-10007 04

EWEN, H.

Radiometric absolute noise-temperature measurement system features improved accuracy and calibration ease
ERC-90066 B70-10376 01

EXTON, R. J.

Visualization of smoke stack plume
LANGLEY-11675 B74-10208 04

F**FABIK, R. H.**

Laser system detects tower deflections
LEWIS-11870 B73-10243 02

FADDOUL, J. R.

Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04

FAGEOL, J. D.

Time-based priority selection for analog circuits
M-FS-24242 B73-10154 02

Acoustic-emission signal-processing analog unit for locating flaws in large tanks
M-FS-24424 B73-10325 06

FAGER, C. A., JR.

Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05

FAHNER, T.

Modular construction provides large volume storage facility in minimum space
M-FS-13568 B71-10354 08

FAIN, D. L.

Solar experiment alignment system
ARC-10471 B72-10020 03
Solar sensor with autocollimator
ARC-10148 B72-10192 03

FAIN, L. T.

Wireless telemetry system for floating bodies
KSC-10855 B74-10028 06

FAITH, L. E.

Heat transfer correlations for kerosene fuels and mixtures and physical properties for Jet A fuel
LEWIS-11652 B72-10742 04

FALES, C. L.

Magnetometer with miniature transducer and automatic transducer scanning apparatus
LANGLEY-11617 B74-10142 02

FALLS, L. W.

Program for standard statistical distributions
M-FS-21466 B72-10602 09

FARKAS, A. J.

Blood pressure measurement and display system
MSC-13036 B72-10334 05

FARLEY, E. P.

Plasma calcining of pigment particles for thermal control coatings
M-FS-21267 B72-10320 04

FARLOW, N. H.

Analysis of microsize particulates
ARC-10647 B72-10565 04

FARNSWORTH, D. L.

Isolated-line commutator-amplifier
M-FS-20734 B71-10148 02

FARRELL, W. T.

Motor brush wear measured with strain gages
GSFC-10886 B70-10266 01

FARTHING, W. H.

Solar aspect determination system
GSFC-11444 B73-10129 02

FARWELL, R. P.

High-temperature-radiation analyzer
ARC-10565 B73-10017 03

FAULKNER, G. E.

Device prepares aluminum surfaces for welding
M-FS-20750 B71-10214 07

FAWKES, G. J.

Pictorial display of materials and processes aids in fabricating complex assemblies
M-FS-24006 B71-10341 01

FAY, R. J.

Metal-shearing energy absorber
HQ-10638 B71-10503 07

FEAGANS, P. L.

Electro-chemical grinding
LANGLEY-10801 B72-10744 08

FEALEY, R. D.

Rapid detection of bacteria in foods and biological fluids
GSFC-11738 B73-10045 05

FEARNEHOUGH, H. T.

Parallel-plate viscometer
NPO-11387 B72-10700 03

FEATHERSTON, A. B.

In-process oxidation protection in fluxless brazing or diffusion bonding of aluminum alloys
MSC-14435 B74-10096 04

FEDOR, O. H.

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KSC-11005 B75-10193 04

FEDORS, R. F.

Parallel-plate viscometer
NPO-11387 B72-10700 03

FEE, K. W.

Miniature spray-painting booth
MSC-15811 B70-10549 03

FEELEY, J.

Automated Data Management Information System (ADMIS)
KSC-10619 B73-10053 09

FEHRENKAMP, L. G.

Inexpensive lightweight mirror
MSC-14615 B74-10155 05

- Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
- FEINSTEIN, L.**
Nondestructive testing of microtab welds
ARC-10176 B72-10296 02
- FELDMAN, A.**
Equipment and procedure for determining the elastic modulus of carbon-epoxy composites
LEWIS-11116 B71-10397 06
- FELDSTEIN, C.**
Implantable drug therapy device: A concept
NPO-11934 B72-10708 05
Subminiature transducers for measuring forces and deformation of heart muscle
NPO-13423 B75-10051 05
Catheter-tip force transducer for cardiovascular research
NPO-13643 B75-10211 05
- FELLER, D. D.**
Automated method for study of drug metabolism
ARC-10469 B73-10030 04
Computer system for monitoring radiorepirometry data
ARC-10784 B73-10494 05
- FENDER, J. R.**
High strength, medium density molded foam
AEC-10053 B72-10235 04
- FENTON, R.**
Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
- FENWICK, J. R.**
Servo-controlled decoupler eliminates oscillations in fluid flow - A concept
M-FS-18793 B71-10430 06
- FERGERSON, P. O.**
Improved linings for integrating spheres
MSC-12237 B70-10413 03
- FERGUSON, D. R.**
Computer program for steamtube curvature analysis: Analytical method
LANGLEY-11535 B74-10206 09
- FERGUSON, H.**
Liquid metal porous matrix sliding electrical contact: A concept
LEWIS-11735 B73-10164 01
- FERGUSON, R. L.**
Miniature sonar fish tag
LANGLEY-11814 B75-10092 02
- FERNANDES, F.**
Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds
LANGLEY-11250 B73-10183 06
Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds
LANGLEY-11249 B73-10184 06
- FERREE, H.**
Silicon switching transistor with high power and low saturation voltage
NPO-11565 B73-10295 01
- FERRELL, S., JR.**
A battery simulator
KSC-10172 B70-10340 01
- FERRI, A.**
Integrated turbine-compressor provides air flow for cooling
HQ-10442 B70-10295 07
- Numerical program for analysis of three-dimensional supersonic exhaust flow fields (CHAR 3D)
LANGLEY-11596 B74-10236 09
- FERRY, G. V.**
Analysis of microsize particulates
ARC-10647 B72-10565 04
- FERRY, R. T.**
Electrical test wire attachment device
KSC-10562 B70-10488 01
- FERYSZKA, M. S.**
Continuous-phase frequency-shift-keyed generator
LANGLEY-11638 B75-10218 02
- FESLER, L. W.**
Program for determination of radiation interchange factors
MSC-17563 B72-10071 09
- FETTEROLF, R. N.**
High strength high modulus ceramic fiber
M-FS-21266 B72-10592 04
- FEWELL, C. M.**
An improved apochromatic wedge utilizing optical molecular contact bonding
GSFC-11082 B72-10388 03
- FICKEY, E. W.**
Improved sampling of compressed gases for condensable hydrocarbon content
KSC-10304 B72-10540 06
- FIET, O.**
Bistable fluidic valve is electrically switched
NPO-10416 B70-10517 07
Electrodynamic actuators for rocket engine valves
ARC-10486 B72-10009 06
Beryllium thin films for resistor applications
ARC-10485 B72-10021 01
Closed-cycle power supply for fluidic control systems
ARC-10480 B72-10163 06
- FIIEWEGER, R.**
Long life, low cost ball valve, with lifted seals and cartridge type construction
MSC-13430 B70-10653 07
- FIFE, W. J.**
Controlled release of free-falling test models
NPO-11314 B70-10077 07
- FILIP, G. L.**
A new packaging and testing concept for microelectronic components
M-FS-20936 B73-10109 01
- FINCANNON, O. J.**
Adjustable locking device
M-FS-21650 B72-10459 07
Tandem steerable running gear
M-FS-22012 B72-10499 07
- FINGERHOOD, C. R.**
Detonation hazards with "safe" industrial solvents
LANGLEY-10299 B70-10404 04
- FINK, L. C.**
SINDA, Systems Improved Numerical Differencing Analyzer
MSC-13805 B72-10736 09
- FISCHBACH, D. B.**
Tensile creep-rate of pyrolytic carbon
NPO-11254 B70-10100 04
- FISCHER, M. C.**
Low temperature ablation models made by pressure/vacuum application
LANGLEY-10676 B70-10578 04
- FISCHER, R.**
Electronic position indicator for latching solenoid valves
LEWIS-10926 B70-10174 01
- FISH, J. W.**
Implantable prosthetic pump boosts blood pressure: A concept
NPO-13626 B75-10177 05
- FISH, R. H.**
Intumescent coatings as fire retardants
ARC-10099 B70-10450 04
Fiber-modified polyurethane foam for ballistic protection
ARC-10714 B75-10062 04
- FISHBACH, L. H.**
A computer program for calculating design and off-design performance for turbojet and turbofan engines
LEWIS-12010 B73-10232 09
A computer program for calculating design and off-design performance of two- and three-spool turbofans with as many as three nozzles
LEWIS-12011 B73-10245 09
- FISHER, A.**
RF shielded connectors
GSFC-11215 B73-10509 01
- FISHER, M. J.**
Atmospheric pollution measurement by optical cross correlation methods - A concept
M-FS-12078 B71-10224 02
- FITCH, R. C.**
Improved measurement of depth perception
M-FS-14133 B72-10730 05
- FITZ, F. A.**
Passive heat transfer control
HQ-10041 B70-10111 03
- FITZGERALD, J. W.**
Cine recording ophthalmoscope
ARC-10399 B72-10189 05
Visual sensitivity tester
ARC-10329 B72-10203 05
- FITZGERALD, T. M.**
Solid state variable time delay
ERC-10032 B70-10492 01
- FITZMAURICE, M. W.**
Dynamic polarization compensating system for optical communications receiver
GSFC-11782 B74-10182 03
Optical communication channel simulator system
GSFC-11877 B74-10258 01
- FLAGGE, B.**
Long-life electromechanical sine-cosine generator
LANGLEY-10503 B71-10029 01
- FLAHERTY, R.**
Thermally cascaded thermoelectric generator
NPO-10753 B70-10280 03
- FLANAGAN, F. M.**
Deep space network
NPO-11562 B72-10043 01
- FLANDERS, H. A.**
Prolate spheroidal slosh model for fluid motion
MSC-13864 B72-10182 09
- FLANDERS, T. E.**
RF to digital converter
JSC-14419 B73-10306 02
- FLARITY, L. D.**
DSIF station schedules
NPO-11547 B71-10243 09

FLATAU, C.

A proposed remote manipulator system:

A concept
MSC-14245 B72-10733 06**FLEENOR, E. G.**Planet geometric center tracker
ARC-10084 B71-10445 02**FLEHINGER, B. J.**A new algorithm for finding survival coefficients employed in reliability equations
M-FS-22295 B73-10256 09**FLEISCHMANN, C. W.**Improved alkaline electrochemical cell
GSFC-10792 B70-10153 01**FLEISHER, E. E.**Hybrid coordinate formulation used for the design of attitude control systems for flexible spacecraft
NPO-11714 B73-10300 09**FLEMING, D. P.**Series-hybrid bearing - An approach to extending bearing fatigue life at high speeds
LEWIS-11152 B71-10173 07Evaluation of rotating, incompressibly lubricated, pressurized thrust bearings
LEWIS-11511 B71-10509 09Design curves for optimizing stability of herringbone-grooved journal bearings
LEWIS-12442 B75-10063 06**FLORSCHUETZ, L. W.**Sonic limitations and startup problems of heat pipes
AEC-10036 B72-10368 03**FLUCHER, C. W. G.**Improved temperature control of liquid cooling garments
MSC-13917 B72-10281 05**FLYNN, W. J.**A valve concept for remote fluid flow control
M-FS-16097 B72-10400 07**FOGAL, G. L.**Zeta potential control for electrophoresis cells
M-FS-22333 B73-10260 04Methods for improved resolution of flow electrophoresis cells
M-FS-22223 B74-10032 04**FOHLEN, G. M.**Intumescent coatings as fire retardants
ARC-10099 B70-10450 04Transparent polymeric laminates
ARC-10783 B73-10341 04**FONDRIE, D. G.**Ground computer test trap
KSC-10574 B70-10561 09**FONTES, M. J.**Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08**FORD, F. A.**The design of an automated verification of redundant systems
KSC-10702 B72-10295 02**FORD, O. I.**Twin-spool turbopumps for "low" net positive suction pressure operations
LEWIS-11105 B70-10671 07**FORD, W.**Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03**FORDYCE, J. S.**Filter cassette for high volume air sampler
LEWIS-11469 B72-10379 03**FORESTIERI, A. F.**Flexible, low-cost silicon solar cell arrays
LEWIS-11069 B72-10177 02Inexpensive pocket-size solar energy meter (insolometer)
LEWIS-12598 B75-10283 01Solar power roof shingle
LEWIS-12587 B75-10289 01**FORMAN, R.**Stainless steel 301 and Inconel 718 hydrogen embrittlement
MSC-13557 B70-10621 04**FORTINI, A.**Thermal conductivity and electrical resistivity of porous materials
LEWIS-11754 B72-10587 04Joining porous components to solid metal structures
LEWIS-11259 B72-10754 08Uniform high irradiance source
LEWIS-12360 B75-10008 03Electrical gas heater with large flow range capability
LEWIS-12361 B75-10024 03**FOSTER, B. J.**Automated Shell Theory for Rotating Structures (ASTROS)
M-FS-21970 B73-10115 09**FOSTER, J. A.**Portable headset microphone checker
KSC-10699 B75-10254 02**FOSTER, J. F.**Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05**FOSTER, J. N.**Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04**FOSTER, J. V.**Laser vibration analyzer
XAC-01670 B71-10249 03**FOSTER, S. D.**Effect of heat treatment and surface oxidation on low-cycle fatigue life of Inconel
M-FS-18712 B70-10092 04**FOUNTAIN, W.**Q-switched, cavity-dumped, mode-locked laser
GSFC-11509 B73-10175 03**FOW, P. B.**Magnetic particle clutch controls servo system
JSC-17136 B73-10041 06**FOWLER, M.**Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09**FOX, C. H.**Prediction of stall characteristics of straight wing aircraft
LANGLEY-11013 B71-10501 09**FOX, C. H. J.**Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow
LANGLEY-11305 B73-10470 06**FOX, C. H., JR.**Theoretical prediction of interference loading on aircraft stores: Part II - Supersonic speeds
LANGLEY-11250 B73-10183 06Theoretical prediction of interference loading on aircraft stores: Part I - Subsonic speeds
LANGLEY-11249 B73-10184 06**FOX, H. A., JR.**Improved high-temperature metal-sheathed cables
NUC-10413 B71-10102 01**FOX, M. G.**Optical monitoring system
M-FS-21692 B73-10050 03**FRANCINO, L.**Dry ice plug for hydraulic and pneumatic pipe flushing
MSC-12548 B72-10496 06**FRANCISCO, A. C.**Protective coating for salt-bath brazing
LEWIS-90255 B71-10381 08**FRANK, H. A.**Miniature fuel cells relieve gas pressure in sealed batteries
XGS-11370 B71-10064 02Nongassing NiCd battery cell
NPO-11853 B75-10174 04**FRANKE, J. M.**Holographic direct-vision spectroscope
LANGLEY-11750 B75-10090 03Dual-band ridged waveguide
LANGLEY-11781 B75-10091 01Visual alignment aid
LANGLEY-11842 B75-10228 03**FRANKIEWICH, P. A.**Inexpensive tamper proof safety relief valve
KSC-10470 B70-10320 07**FRAREY, J. L.**New detection method for rolling element and bearing defects
M-FS-21911 B72-10689 06**FRASER, D. C.**Method of statistical filtering
MSC-13493 B70-10427 06**FRASKETI, A. S.**Diagnostic capability added to digital events evaluator
KSC-10526 B71-10001 02**FRAZIER, M. J.**Junction range finder
KSC-10108 B73-10191 02**FRECHE, J. C.**High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 B71-10489 04High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04Advanced alloy design technique: High temperature cobalt base superalloy
LEWIS-10436 B72-10514 04Autoclave heat treatment for prealloyed powder products
LEWIS-11953 B73-10172 04Cobalt base superalloy has outstanding properties up to 1478 K (2200 F)
LEWIS-12089 B74-10081 03High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04**FREEMAN, J. M.**Computerized polar plots by a cathode ray tube/grid overlay method
M-FS-14464 B70-10311 03

- FREEMAN, W.**
Regulated-current dc power supply for
gaseous-discharge lamps
GSFC-10293 B70-10239 02
- FRENCH, B. O.**
Improved linings for integrating spheres
MSC-12237 B70-10413 03
- FRESKA, S. A.**
Holographic evaluation of fatigue cracks
by a compressive stress (HYSTERESIS)
technique
MSC-14555 B74-10156 06
- FREUND, T.**
Improved zinc oxide thermal control
coatings
NPO-11139 B72-10711 04
- FRIEDEL, M. V.**
Heat-transfer thermal switch
LANGLEY-11232 B74-10092 06
- FRIEDLY, J. C.**
Thermal induced flow oscillations in heat
exchangers for supercritical fluids
M-FS-21262 B72-10598 06
- FRIEDMAN, M.**
A process yields large quantities of pure
ribosome subunits
HQ-10662 B72-10653 05
- FRIEDMAN, O. M.**
Stabilization of lactate dehydrogenase
ARC-10415 B72-10062 05
- FRIEDMAN, R.**
Flame zone of a composite propellant
expanded by a laser source
LANGLEY-10660 B71-10335 03
- FRIGERIO, N. A.**
Rapid analytical determination of
glutaraldehyde concentrations
ARG-10413 B71-10047 05
- FRISBIE, H. F.**
Solar aspect determination system
GSFC-11444 B73-10129 02
- FRITZ, J.**
A method of isolating organic compounds
present in water
AEC-10010 B72-10044 04
- FROHMBER, R. P.**
Hydrogen-environment embrittlement of
metals: A study
M-FS-22540 B73-10168 04
- FROST, A. E.**
A flexible cruciform journal bearing
mount
LEWIS-11035 B73-10001 07
- FROST, J. D., JR.**
Electronic sleep analyzer
MSC-13282 B70-10110 02
Improved biomedical electrode
MSC-13648 B72-10642 05
- FRUMKIN, B.**
A method for economic evaluation of
redundancy levels for aerospace systems
KSC-10754 B73-10067 09
- FRYE, R. J.**
Electronic position indicator for latching
solenoid valves
LEWIS-10926 B70-10174 01
- FRYER, T. B.**
RF-controlled implantable solid state
switch
ARC-10136 B71-10426 01
Miniature battery-operated
electromagnetic system for blood flow
measurements
ARC-10362 B71-10477 05
Narrowband, crystal-controlled
biomedical telemetry system
ARC-10708 B72-10255 01
- An ingestible temperature-transmitter
ARC-10583 B72-10275 01
- FRYKLUND, D. H.**
Piezoelectric relay
GSFC-11627 B74-10089 01
- FUCHS, C. E.**
Remote coupling of air lines
NUC-10225 B71-10101 07
- FUEG, L. B.**
Filler-wire positioner for electron beam
welding
MSC-15637 B70-10604 08
- FUHRMANN, H. W.**
X-connectors for tubing - Feasibility
study
M-FS-20827 B70-10418 07
- FUJIMOTO, H.**
Stable photosensor amplifiers
NPO-11561 B72-10100 01
Fail-safe bidirectional valve driver
NPO-11958 B73-10450 07
- FULKERSON, W.**
Mercury in the environment
AEC-10048 B72-10233 05
- FULLER, C. E.**
Three-dimensional gas turbulence
measurement with a laser-Doppler
velocimeter system
M-FS-22713 B73-10371 04
- FULLER, C. J.**
Easy manual operation of overhead
garage doors - A concept
KSC-10555 B70-10543 07
- FULLER, J. D.**
Artificial atmosphere control system
M-FS-22159 B73-10089 05
- FULLERTON, E. A.**
Directory of aerospace safety specialized
information sources
LEWIS-12223 B74-10019 03
- FUNK, B. H.**
Optical probing of supersonic
aerodynamic turbulence
M-FS-20686 B70-10665 03
Optical probing of supersonic flows with
statistical correlation
M-FS-20642 B71-10252 03
Laser net - A concept for monitoring
wingtip vortices on runways
M-FS-20857 B71-10360 02
- FURIA, T. J.**
Hall effect encoding of brushless dc
motors
GSFC-10789 B70-10188 01
- FURNER, R. L.**
Automated method for study of drug
metabolism
ARC-10469 B73-10030 04
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Minimum weight meteoroid shielding
determination
MSC-17017 B71-10447 09
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Polyimide bonded graphite fluoride: A
new long life solid lubricant coating
LEWIS-11864 B72-10628 04
- FYMAT, A. L.**
Interferometer for measurement of
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NPO-11239 B70-10405 03
Developments in spectrophotometry I:
An instrument for high-resolution
measurements of optical intensity and
polarization
NPO-13604 B75-10332 03
- Developments in spectrophotometry II:
A multiple-frequency particle-size
spectrometer
NPO-13606 B75-10333 03
Developments in spectrophotometry III:
Multiple-field-of-view spectrometer to
determine particle-size distribution and
refractive index
NPO-13614 B75-10335 03
Minimization search method for data
inversion
NPO-99999 B75-10338 09

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- GABBARD, N. M.**
Automatic marker for photographic film
MSC-14705 B74-10152 03
- GABRIELSEN, R. E.**
Algorithm for nonlinear stationary
Navier-Stokes problem
ARC-10960 B75-10143 09
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computer
LEWIS-11001 B71-10407 06
- GAHAN, J. W.**
Advanced high-temperature
electromagnetic pump
LEWIS-11283 B72-10537 07
- GAILEY, J. A.**
Titanium alloy stress corrosion cracking
in presence of dinitrogen tetroxide
M-FS-21113 B72-10321 04
- GAISER, E. E.**
Color television system using single gun
color cathode ray tube
ERC-10098 B70-10464 02
- GAITENS, M. J.**
Study-simulation of space station
dynamics
M-FS-21227 B71-10382 09
- GALE, G. P.**
High pressure flow-rate switch
NPO-10722 B70-10028 07
- GALEF, A. E.**
Tracking antenna deformation program
GSFC-11191 B71-10017 09
- GALLAGHER, R. C.**
Technique for producing bipolar and MOS
field effect transistors on a single chip
MSC-13358 B70-10218 01
- GALLO, E. A.**
Low-noise flow valve for air ducts
MSC-13441 B70-10640 07
Anti-slipping system improves wire saw
performance
MSC-13508 B71-10522 07
- GALVAS, M. R.**
Program for calculating total-efficiency
of specific-speed characteristics of
centrifugal compressors
LEWIS-12008 B73-10309 09
Computer program for predicting
off-design performance of centrifugal
compressors
LEWIS-12186 B74-10067 09
- GALVIN, D. H., JR.**
Pental circuit may be used in
conversionless decimal counter
HQ-10146 B70-10336 01
- GAMARI, F. J.**
Improved fabrication of electrolytic
capacitors
M-FS-23133 B74-10294 01

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Environmental control and waste management system design concept
LANGLEY-11588 B74-10235 06
- GANGE, R. A.**
Photoemissive coating
M-FS-22003 B72-10638 08
Laser addressed holographic memory system
M-FS-22565 B73-10155 03
An improved holographic recording medium
M-FS-22532 B73-10166 09
Laser-actuated holographic storage device
M-FS-22768 B73-10423 03
Read-only optical storage medium
M-FS-23169 B75-10305 03
- GARAVAGLIA, A.**
Seat belt restraint system
ARC-10519 B72-10692 06
- GARBER, R. L.**
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07
- GARCIA, G.**
Visual device to assist computer program debugging
MSC-15833 B70-10308 09
- GARDNER, J. B.**
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
- GARDNER, R. A.**
New broadband square-law detector
NPO-13410 B75-10180 02
High-accuracy programable square-law detector system
NPO-13525 B75-10240 02
- GARDNER, W. C.**
Electromagnetic connector
JSC-17420 B73-10125 07
- GARDOS, M. N.**
Refractory porcelain enamel passive-thermal-control coating for high-temperature superalloys
M-FS-22324 B73-10215 04
- GARDY, H. F.**
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LEWIS-10966 B70-10287 07
- GARETT, H.**
Flexible desk top computers using Large Scale Integration (L.S.I.) chips
M-FS-21277 B72-10112 01
- GARMIRE, E. M.**
Transmission of optical frequencies with minimal losses
HQ-10541 B72-10389 03
- GARNER, H. D.**
Magnetic-heading reference device
LANGLEY-11387 B74-10176 02
Pulse-width-modulated servo valve for autopilot system
LANGLEY-11643 B74-10179 06
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LANGLEY-10658 B71-10002 09
Characteristics of FORTRAN
LANGLEY-11177 B73-10322 09
- GARRAHAN, N. M.**
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GSFC-10837 B70-10053 01
- GARRARD, G. G.**
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MSC-15893 B70-10551 04
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Telecommunications systems design techniques handbook
NPO-13245 B74-10284 02
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Reductive cleavage of the peptide bond
LRL-10026 B73-10194 04
- GARTON, W. P.**
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M-FS-24109 B72-10381 06
- GARVIE, C. L.**
Laser beam deflection control: A concept
MSC-13814 B72-10411 02
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Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G
MSC-11653 B72-10721 09
- GASSER, M. G.**
Molecular sieves control contamination and and insulate in thermal regenerators - A concept
GSFC-10910 B70-10424 07
- GATES, D. W.**
Improved thermal paint formulation
M-FS-14706 B71-10180 03
- GATEWOOD, J. R.**
Thin-film temperature sensor
NPO-11775 B74-10100 01
- GATOS, H. C.**
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
- GAUDIANO, S.**
Modifications to a vacuum assisted filtering device to minimize contamination
MSC-13733 B71-10277 04
- GAUNTNER, J. W.**
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- GAUSE, F. L.**
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
- GAUSE, R. L.**
Hydraulically operated tilt table
M-FS-21047 B71-10024 05
Multimode ergometer system
M-FS-21044 B71-10107 05
Tilt table for ergometers and other biomedical devices
M-FS-21010 B71-10241 05
- GAVALER, J. R.**
Magnets with stabilized conductors
HQ-10727 B72-10465 03
- GAVERT, R. B.**
Process for producing molybdenum foil and collapsible tubing
GSFC-10008 B71-10073 08
- GAVRILLIS, T. G.**
Flared-cone turnstile antenna
LANGLEY-10970 B73-10425 02
- GAYMAN, W. H.**
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NPO-11895 B74-10211 03
- GDICKMAN, S. A.**
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ARC-10567 B72-10419 04
- GEBBEN, V. D.**
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LEWIS-11094 B70-10352 06
Control system for an artificial heart
LEWIS-11057 B70-10469 05
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LEWIS-11581 B72-10512 05
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Extended range harmonic filter
LEWIS-12064 B73-10313 02
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A flexible cruciform journal bearing mount
LEWIS-11035 B73-10001 07
- GEISE, P. E.**
Real-time video correlator
M-FS-23200 B75-10265 02
- GEISS, G. R.**
The determination of stability domains for nonlinear dynamical systems
M-FS-14832 B70-10539 03
Algorithm for Liapunov stability analysis
ARC-10498 B72-10023 09
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Single crystals of metal solid solutions: A study
M-FS-23268 B75-10268 03
- GELLMAN, L.**
Memory reduction through higher level language hardware
M-FS-21128 B72-10350 09
- GEORGATSOIS, F. D.**
Saturn S-2 base environment for flight evaluation
M-FS-16597 B70-10555 09
- GEORGE, F. D.**
Metallic composites as high-temperature fasteners
M-FS-22438 B73-10081 04
- GERBER, A. H.**
Curable polyphosphazenes
M-FS-23134 B75-10038 04
- GERDTS, J. C., JR.**
Mechanical planetary compensating drive system
ARC-10462 B73-10497 06
- GERLACH, C. R.**
Design and development criteria for metal bellows
M-FS-20640 B70-10125 05
Ion-tracer anemometer
M-FS-21399 B73-10151 04
- GERSHMAN, R.**
Updated, expanded, fluid properties handbook
M-FS-21169 B71-10078 04
- GERSTLEY, J. G.**
Regenerative cooling design and analysis computer program
LEWIS-12110 B75-10015 09
- GETSUG, J.**
New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
- GETTLEMAN, C. C.**
Durable cathodes for high-power inert-gas arcs
LEWIS-11162 B71-10264 03
- GETTY, R. C.**
Evaluation of two designs for cryogenic insulation
M-FS-14740 B70-10415 03

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Tubing cutter
NPO-11524 B72-10095 07
Low-cost tool set for removing brazed fittings
NPO-13495 B75-10054 07
- GIBSON, F. W.**
Position indicating, rotating boom
LANGLEY-11202 B72-10066 07
- GIBSON, G.**
Single-level resonance parameters fit nuclear cross-sections
NUC-10101 B70-10686 03
- GIBSON, J. C.**
Nondestructive testing for braze voids in thin panels by use of special coatings
LANGLEY-10486 B72-10374 08
- GIBSON, S. F.**
Microbial load monitor
MSC-14062 B75-10167 05
- GIETZEN, A. J.**
Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
- GIFFIN, C. E.**
Electro-optical detector to improve sensitivity of a focal-plane mass spectrometer
NPO-13524 B75-10328 03
Automated mass spectrometer/analysis system: A concept
NPO-13572 B75-10331 05
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Computer program for predicting symmetric jet mixing of compressible flow in jets
ARC-10730 B73-10263 09
- GILBREATH, W. P.**
Semipermanent sealing of leaks in high vacuum systems
ARC-10881 B74-10175 04
Apparatus for study of plasmas at elevated temperatures
ARC-10958 B75-10285 03
- GILCHRIST, C.**
Telemetry receiver
NPO-10746 B70-10008 02
- GILDER, J. R.**
Telecommunications systems design techniques handbook
NPO-13245 B74-10284 02
- GILHOUSEN, K. S.**
High speed sequential decoder
ARC-10657 B72-10568 09
- GILL, G. S.**
Starter propellants and auxiliary generators for gas turbines
M-FS-18813 B70-10701 07
- GILL, S. P.**
Plasma conductivity gage
ARC-10147 B70-10510 03
- GILLEY, G. C.**
Automated maintenance for complex hybrid systems
NPO-13143 B74-10279 09
High-speed fault-tolerant telemetry/computer interface
NPO-13139 B74-10296 02
- GILLIGAN, J. E.**
Study of in-situ degradation of thermal control surfaces
M-FS-20892 B72-10336 04
Investigation of environmental effects on coatings for thermal control
M-FS-21932 B72-10596 04
- Vacuum-stripped silicone binder for thermal-control paint
M-FS-21397 B73-10060 04
- GILLMORE, W. F., JR.**
High-resolution spectral analysis
NPO-10748 B70-10039 01
- GILMAN, M. M.**
Flange design for large-scale modular assembly jigs
MSC-19372 B74-10273 06
- GILWEE, W. J.**
Polyimide fiber-glass composite resists high temperatures
ARC-10782 B73-10505 04
- GINER, J.**
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
New electrocatalysts for hydrogen-oxygen fuel cells
HQ-10537 B70-10145 01
Al/Ci2 molten salt battery
HQ-10696 B72-10527 01
- GINER, J. D.**
Several new catalysts for reduction of oxygen in fuel cells
HQ-10452 B70-10021 01
Single crystal tubes of beta alumina
LEWIS-11844 B73-10316 04
- GIORDANO, S. M.**
Noncontaminating technique for making holes in existing process systems
LEWIS-11595 B72-10385 07
- GITTLEMAN, J. T.**
Superconductor transition temperatures study
M-FS-21247 B71-10385 03
- GIVENS, W. D.**
Systems effectiveness evaluation program
HQ-10306 B72-10458 09
- GLANDORF, D. R.**
Optimum Multi-Impulse Rendezvous Program
MSC-13139 B70-10623 06
- GLASS, I. S.**
Pulse rates recorded by digital film positioner
HQ-10358 B70-10141 01
- GLASSFORD, A. P.**
Effects of environmental exposure on cryogenic thermal insulation materials
LEWIS-12007 B73-10213 04
- GLASSMAN, A. J.**
Computer program for preliminary design analysis of axial-flow turbines
LEWIS-11815 B73-10066 09
Computer program for thermodynamic analysis of open-cycle multishaft power system
LEWIS-12324 B75-10002 09
- GLAWE, G. E.**
Long-term drift of thermocouples at 1600 K
LEWIS-11471 B72-10176 01
A multielement probe for coincident temperature and pressure measurements
LEWIS-11775 B72-10716 06
A new high temperature noble metal thermocouple pairing
LEWIS-12545 B75-10245 03
- GLENN, C. G.**
Conductive elastomeric extensometer
M-FS-21049 B71-10032 01
- GLENN, D. L.**
Tandem steerable running gear
M-FS-22012 B72-10499 07
- GLICKMAN, S. A.**
Development of conformal coating materials
M-FS-21393 B71-10483 04
Technique for increasing yield of trifluoronitrosomethane-tetrafluoroethylene copolymer
ARC-10566 B72-10418 04
- GLOBUS, H.**
Preparation of fine-particles at cryogenic temperatures
NPO-10250 B70-10182 04
- GLOBUS, R. H.**
Rising-plate rheometer
ARC-10524 B72-10026 03
Cryogenic gel flow viscometer
ARC-10523 B72-10180 03
Electromagnetic rheometer
ARC-10525 B72-10416 04
- GLORIA, H. R.**
Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04
- GLOSSBRENNER, E. W.**
Inorganic glass ceramic slip rings
M-FS-20711 B72-10313 04
- GLUCKLICK, J.**
Effect of size on cracking of materials
NPO-11602 B71-10158 04
- GODDING, R. A.**
Improved discrimination in photographic density contouring
JSC-12588 B73-10441 03
- GODFREY, J. F.**
Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05
- GOETTELMAN, R.**
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ARC-10867 B75-10026 03
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A panel space for RFI shielding gaskets: A concept
MSC-17827 B72-10735 01
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Hall effect encoding of brushless dc motors
GSFC-10789 B70-10188 01
- GOLDEN, D. P.**
Automated analysis of blood pressure measurements (Korotkov sound)
MSC-13999 B72-10756 05
Computer program for analysis of vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
- GOLDEN, D. P., JR.**
Contourograph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
- GOLDMAN, G. C.**
Durable cathodes for high-power inert-gas arcs
LEWIS-11162 B71-10264 03
- GOLDMAN, L. J.**
Design of two-dimensional sharp-edged-throat supersonic nozzle with boundary-layer correction
LEWIS-11636 B72-10070 09
- GOLDSBERRY, R. E.**
Ultraviolet and thermally stable polymer compositions
ARC-10592 B72-10709 04
- GOLDSCHMIED, F. R.**
Dynamic response of viscous compressible fluids in rigid tubes
M-FS-20542 B71-10269 03

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Reusable silica surface-insulation material
ARC-10721 B73-10504 04
- GOLDSTEIN, M.**
Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
LEWIS-11490 B74-10124 04
- GOLDSTEIN, R.**
Telemetry receiver
NPO-10746 B70-10008 02
- GOLDSTEIN, R. M.**
Single-channel digital command-detection system
NPO-11302 B73-10342 02
Improved noise-adding radiometer for microwave receivers
NPO-11706 B73-10345 02
Quasars as very-accurate clock synchronizers
NPO-13276 B75-10114 02
- GONZALEZ, R.**
Leaching of nitroso rubber material removes uncured polymer
MSC-17185 B72-10449 04
Self-aligning, low-pressure sealing poppet valve
MSC-17745 B72-10538 07
- GOODER, S. T.**
Self-protecting solid state isolated switch
LEWIS-12268 B74-10069 01
- GOODMAN, R. M.**
Subminiature micropower digital recorder
ARC-10746 B73-10491 02
- GOODWIN, J. E.**
Small, efficient power supply for xenon lamps
MSC-13637 B70-10684 01
- GOODWIN, P. S.**
Deep space network
NPO-11562 B72-10043 01
- GOODYER, M. J.**
A stagnation pressure probe for use in supersonic flow
LANGLEY-11139 B72-10543 06
- GOORVITCH, D.**
Combined effects of a converging beam of light and mirror misalignment in Michelson interferometry
ARC-10889 B74-10246 03
- GORDON, B. L.**
Television noise-reduction device
JSC-12607 B73-10431 02
- GORDON, F. T., JR.**
Inflatable stretcher to transport patients
HQ-10179 B70-10254 05
- GORDON, S.**
Computer program for calculation of complex chemical equilibrium compositions
LEWIS-11714 B72-10718 09
- GORDON, W. A.**
Simplified procedure for emission spectrochemical analysis
LEWIS-10985 B71-10359 04
- GORELICK, D.**
An economical arterial-pulse-wave transducer
GSFC-11531 B73-10046 05
- GORENSTEIN, P.**
Reduction of background in an X-ray proportional counter
HQ-10253 B70-10169 02
- Remote sensing X-ray spectrometer
MSC-13978 B72-10016 03
Compact source of soft X-rays
HQ-10732 B74-10232 03
- GORLAND, S.**
TFE coating extends life of flexible metal compressor diaphragm
LEWIS-11113 B70-10609 07
- GORLAND, S. H.**
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
- GOSSELIN, C. M.**
An improved Orbitron ionization gage measures ultrahigh vacuum
LANGLEY-10535 B70-10611 03
- GOUDIE, L. A.**
A closed loop cryogenic environment pressure regulating system
MSC-13880 B72-10390 02
- GOUGH, F. K., JR.**
Viewgraph preparation made easier
LANGLEY-11612 B74-10094 03
- GOULD, W. I., JR.**
Millimeter-wave antenna system
GSFC-10949 B73-10333 01
- GOWDEY, M. V.**
New pulsing technique may improve radar ranging systems
ARC-10600 B72-10564 02
- GRAAB, J. W.**
Rapid method for determining nitrogen in tantalum and niobium alloys
LEWIS-12237 B74-10085 04
- GRACEY, C. M.**
High-temperature rapid-response thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
Inexpensive high-temperature furnace for thermocouple calibration
NUC-10372 B71-10046 03
- GRAF, E. R.**
Analysis and optimization of an omnidirectional direction-finding system
M-FS-14346 B70-10112 02
- GRAHAM, U. O.**
Inspection of transparent surfaces using photosensitive paper
MSC-19442 B74-10224 03
- GRAMER, J.**
Variable boundary II heat conduction
LEWIS-10679 B72-10444 09
- GRANT, G. R.**
Optical enhancement of photomultiplier sensitivity
ARC-10213 B71-10113 03
Optical enhancement of sensitivity in laser Doppler velocity systems
ARC-10653 B72-10310 03
Laser velocimeter for simultaneous two-dimensional velocity measurements
ARC-10637 B73-10267 02
- GRANT, L. E.**
Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07
- GRANT, R. L.**
A range expanding signal conditioner
M-FS-21720 B72-10639 02
- GRAVETTE, M. C.**
Manpower management information system /MIS/
M-FS-21477 B71-10431 09
- GRAY, J. L.**
An automatic lightning detection and photographic system
KSC-10728 B73-10043 02
- GRAY, J., JR.**
High-speed digital plotter
ARG-90001 B71-10049 02
- GRAY, N. D.**
Motivation techniques for supervision
JSC-19187 B73-10448 05
- GRAY, V. H.**
Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
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Mathematical analysis for the performance assessment of space communication parameters, IBM-360 version
GSFC-11523 B72-10675 09
- GREBER, I.**
Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06
- GREBOWSKY, G. R.**
Noise diffraction patterns eliminated in coherent optical systems
GSFC-11133 B71-10236 03
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A proposed remote manipulator system: A concept
MSC-14245 B72-10733 06
- GREELEY, R.**
Remote estimation of soil moisture
ARC-10867 B75-10026 03
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Fatigue properties of sheet, bar, and cast metallic materials for cryogenic applications
M-FS-18427 B70-10199 04
- GREEN, K. A.**
Highly-efficient horn/reflector antenna
NPO-13568 B75-10330 01
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NPO-11346 B72-10243 05
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Single-channel digital command-detection system
NPO-11302 B73-10342 02
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Systems for dead-reckoning navigation and for simulation of instrumental error - Concepts
M-FS-20860 B71-10072 07
- GREENBAUM, G.**
Computer program for predicting creep behavior of bodies of revolution
NUC-11104 B71-10037 09
- GREENE, R. C.**
Hall effect encoding of brushless dc motors
GSFC-10789 B70-10188 01
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New system for bathing bedridden patients
ARC-10745 B73-10272 05
Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05
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Study of high altitude plume impingement
M-FS-21414 B72-10601 09
- GREENWOOD, T. L.**
Improved manual radio frequency direction finder
M-FS-20507 B70-10422 02

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Computer program for calculating laminar, transitional, and turbulent boundary layers for a compressible axisymmetric flow
LEWIS-12178 B74-10129 09
- GREGG, P. C.**
Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02
- GREGORY, B. R.**
Post Flight Dynamic Analysis Simulation
M-FS-15067 B70-10605 09
- GREGORY, E.**
Standard environmental testing practices
NPO-11567 B72-10101 02
- GREKILA, R. B.**
High temperature glass coatings for superalloys and refractory metals
LEWIS-10700 B70-10430 08
- GRESZCZUK, L.**
Biaxial prestressing of brittle materials
M-FS-20272 B70-10316 04
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GSFC-11408 B71-10500 09
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NPO-11776 B73-10385 04
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HQ-10597 B71-10287 01
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KSC-10793 B75-10255 01
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LEWIS-11267 B72-10256 04
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M-FS-22536 B74-10043 09
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GSFC-10008 B71-10073 08
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LANGLEY-11012 B72-10731 01
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NPO-11960 B72-10747 09
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NPO-13557 B75-10329 03
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JSC-14486 B73-10428 05
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M-FS-21129 B72-10360 03
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M-FS-20816 B70-10690 03
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NPO-13443 B75-10204 02
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ARC-10511 B72-10025 08
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ARC-10303 B72-10197 07
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ARC-10461 B73-10493 03
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M-FS-20776 B71-10437 04
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ARC-10308 B72-10198 03
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ARC-10194 B71-10112 03
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ARC-10213 B71-10113 03
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ARC-10653 B72-10310 03
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NPO-11805 B73-10114 09
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NPO-13368 B74-10215 09
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M-FS-20445 B70-10238 02
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LEWIS-11063 B70-10362 07
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LEWIS-12034 B73-10250 07
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NPO-10745 B70-10282 02
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ARC-10509 B72-10014 01
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NPO-11749 B73-10025 03
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LANGLEY-11027 B72-10725 04
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LEWIS-11274 B72-10447 07
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GSFC-11893 B75-10214 06

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NPO-11427 B71-10191 03
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LANGLEY-11369 B73-10363 09
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M-FS-20587 B71-10366 02
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NPO-13118 B74-10277 02
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LANGLEY-11071 B72-10663 06
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LEWIS-11162 B71-10264 03
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M-FS-21831 B72-10589 09
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M-FS-22693 B73-10327 02
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M-FS-22910 B74-10190 09
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NPO-11353 B71-10036 03
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M-FS-22873 B74-10189 09
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M-FS-21671 B72-10682 02
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LANGLEY-10743 B70-10235 04
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M-FS-20508 B70-10368 07
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M-FS-21848 B72-10380 06
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NPO-12017 B70-10244 07
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JSC-14310 B73-10227 09
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NPO-11554 B72-10341 03
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AEC-10042 B72-10240 03
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NPO-11556 B73-10383 03
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M-FS-21406 B74-10040 09
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M-FS-20561 B70-10012 06
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M-FS-21166 B71-10227 06
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NPO-11951 B74-10105 07
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LANGLEY-11607 B74-10178 02
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ARC-10438 B72-10212 03
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LANGLEY-11535 B74-10206 09
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MSC-17619 B72-10625 09
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LEWIS-11595 B72-10385 07
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LANGLEY-10036 B70-10104 04
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HQ-10317 B70-10069 02
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M-FS-18693 B71-10309 01
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NPO-12049 B71-10446 06
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ARC-10101 B70-10161 02
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ARC-10264 B70-10337 01
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M-FS-21822 B72-10645 07
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NPO-11261 B70-10399 06
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JSC-14149 B73-10092 05
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JSC-14391 B73-10177 05
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LEWIS-11096 B70-10563 03
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LANGLEY-10782 B72-10356 08
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M-FS-23062 B74-10292 07
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Annular objective apertures improve resolution of electron microscopes
ARC-10448 B72-10171 03
- HEINEY, O. K.**
Self-sealing propellant-actuated device eliminates atmosphere contamination
NPO-11013 B70-10248 07
- HEINRICH, P. L.**
High efficiency optical beamsplitter designed for operation in the infrared region
GSFC-10721 B70-10211 02
- HEISMAN, R. M.**
Use of acrylic sheet molds for elastomeric products
MSC-15636 B70-10019 08
- HELF, J. C.**
Adhesive for aluminum withstands cryogenic temperatures
M-FS-16848 B72-10346 04
A monostrain test apparatus
M-FS-24221 B72-10679 06
- HELLA, R.**
Industrial laser welding: An evaluation
M-FS-23237 B75-10267 08
- HELLBAUM, R. F.**
Improved wax mold technique forms complex passages in solid structures
XLA-07829 B71-10063 05
Wall attachment, fluoric crossover "AND" gate
XLA-07391 B71-10178 07
- HELM, C.**
Colorimetric detection of ethylene glycol vapor
MSC-13222 B70-10031 03
- HELM, F. R.**
Standardized Pearson type 3 density function area tables
M-FS-20541 B71-10205 02

- HENDERSON, M. E.**
A dual-beam actinic light source for
photosynthesis research
ARC-10351 B72-10205 05
- HENDRICKS, C. M.**
Breathing-metabolic simulator
HQ-10766 B72-10657 05
Metabolic simulation chamber
HQ-10776 B72-10658 05
Drive mechanism for production of
simulated human breath
HQ-10777 B72-10659 05
Temperature and humidity control of
simulated human breath
HQ-10778 B72-10660 05
Simulated breath waveform control
HQ-10779 B72-10661 05
- HENDRICKS, R. C.**
Survey of heat transfer to near critical
fluids
LEWIS-11289 B71-10262 03
Computer program for calculating water
and steam properties
LEWIS-12206 B74-10123 09
Computer program for calculating water
and steam properties
LEWIS-12519 B75-10187 09
Computer program for calculating
thermodynamic and transport properties of
fluids
LEWIS-12520 B75-10188 09
- HENDRICKS, T.**
Spin vector control of a spinning space
station
M-FS-21333 B71-10296 09
- HENDRICKSON, R. J.**
Prevention of damage to delicate
connectors during mounting of heavy
engines for testing
NUC-10322 B71-10044 06
- HENDRON, J. A.**
Methyl alcohol used as penetrant
inspection medium for porous materials
NUC-10419 B71-10103 06
Locating tube blockage that X-ray cannot
detect
NUC-10386 B71-10129 06
- HENNEMAN, M.**
Fortran Automatic Code Evaluation
System (FACES)
M-FS-22910 B74-10190 09
- HENRY, C. S.**
Fluidic ignition detection
M-FS-21498 B72-10158 06
- HENRY, J.**
A magnetic mouse activity meter
HQ-10664 B72-10482 05
- HENRY, R. H.**
Predicting vibrational failure of flexible
ducting
M-FS-16750 B71-10150 06
- HENSLEY, D. R.**
Deadweight calibration of pressure gages
without contamination
M-FS-18690 B70-10586 07
- HENSLEY, W. E.**
Rene 41 heat treatment electron
microscopy
M-FS-18633 B70-10081 04
Mechanism and kinetics of aging in
Inconel 718
M-FS-18775 B70-10261 04
Effects of hydrogen on ELI titanium alloy
Ti-5Al-2.5Sn
M-FS-18815 B70-10366 04
- HERBERT, A. L.**
Intensive care alarm system
GSFC-11377 B73-10126 02
- HERMANN, R. L.**
Noise diffraction patterns eliminated in
coherent optical systems
GSFC-11133 B71-10236 03
- HERNDON, E. P.**
Self-regenerating desiccant system
M-FS-23057 B74-10266 07
Low-cost hot-air solar collector
M-FS-23272 B75-10301 08
- HERNDON, J. R.**
Analysis of circuits including magnetic
cores (MTRAC)
NPO-11494 B72-10724 02
- HERRERA, J. G.**
Continuous-flow variable-density wind
tunnel facilities
NPO-11287 B72-10078 06
Rocket plume properties measured in
space simulators
NPO-11608 B73-10137 03
- HERRING, H. J.**
Computing incompressible laminar and
turbulent boundary layer formation
LEWIS-11190 B71-10155 09
- HERSH, M. S.**
Fatigue of boron-aluminum composites
bonds and joints
M-FS-22325 B73-10079 04
- HERSHEY, L. M.**
Radio direction finder
NPO-11573 B72-10508 02
- HERSKOWITZ, G. J.**
Analytic procedures for determining
dimensional redundancies in electronic
devices
HQ-10709 B72-10656 09
- HERTZBERG, M.**
Flame zone of a composite propellant
expanded by a laser source
LANGLEY-10660 B71-10335 03
- HERTZENDORF, B. H.**
Brushless DC motor with dual windings
M-FS-21290 B71-10530 02
- HERZOG, R. F.**
Mass spectrometer detects high
molecular weight components
HQ-10477 B70-10057 01
- HESKETT, H.**
Electroshock protection circuit
JSC-14222 B73-10261 02
- HESS, J. L.**
Improved axisymmetric potential flow
computer program
LEWIS-12387 B75-10243 09
- HESS, P. D.**
Film breakers prevent migration of
aqueous potassium hydroxide in fuel cells
MSC-13174 B70-10277 01
- HESTER, H. B.**
Voltage regulator dissipates minimal
power and functions as a voltage divider
M-FS-20935 B71-10367 01
- HEWES, D. E.**
Gust alleviation system to improve ride
comfort of light airplanes
LANGLEY-11771 B75-10224 03
- HEWITT, R. R.**
Nondestructive testing of adhesive bonds
by nuclear quadrupole resonance method
M-FS-21160 B71-10208 04
- HEYMAN, J. S.**
Ultrasonic calibration device
LANGLEY-11435 B73-10420 03
- Transmission Oscillator Ultrasonic
Spectrometer (TOUS): A new research
instrument
LANGLEY-11735 B75-10035 03
- HEYSER, R. C.**
Time-adjusted variable resistor
NPO-11306 B72-10116 01
Pulse-width-modulated device for
precision temperature control
NPO-11407 B72-10507 02
- HICKERNELL, F. S.**
Nomograph for prediction of
RF-breakdown voltages
NPO-11819 B73-10386 01
- HICKS, W. W.**
Wiring harnesses documented by
punched-card technique
NPO-11249 B70-10091 09
- HIGA, W. H.**
Simplified heat engine
NPO-13613 B75-10334 07
- HIGGINS, L. E.**
Rapid method for sampling metals for
materials identification
MSC-17332 B71-10320 04
- HIGGINS, P. H.**
Ground computer test trap
KSC-10574 B70-10561 09
- HIGGINS, W. T.**
Economical phased-array antenna for
environmental applications
HQ-10434 B71-10057 02
- HIGHMAN, C. O.**
Flexible pivot mount eliminates friction
and hysteresis
M-FS-20725 B70-10577 07
- HILBERT, E. E.**
Transistor current and voltage limiting
switch
NPO-11166 B70-10414 01
Data multiplexer using a tree switch
NPO-11333 B73-10289 02
Flexible format, computer accessed
telemetry system
NPO-11358 B73-10290 02
- HILBORN, E. H.**
Luminescent screen composition and
apparatus
ERC-10010 B70-10440 01
Multilayer screen gives cathode ray tube
high contrast
ERC-10217 B70-10454 01
Color television system using single gun
color cathode ray tube
ERC-10098 B70-10464 02
Ambient-light-absorbing screen for front
projection
ERC-90017 B70-10472 03
Visual display panel functions as
computer input/output device
ERC-10223 B70-10476 01
- HILL, J. P., JR.**
Machine finishes balls to high degree
of roundness
M-FS-21448 B72-10595 08
- HILL, O. E.**
Short-duration, transonic flow,
variable-porosity test section
M-FS-20509 B70-10256 03
- HILL, P. G.**
Computer program for predicting
symmetric jet mixing of compressible flow
in jets
ARC-10730 B73-10263 09

HILL, V. L.

Oxidation resistant iron and nickel alloys
for high temperature use
LEWIS-10936 B70-10210 04

HILL, W. L.

Strain compatibility tests for sprayed
foam cryogenic insulation
M-FS-16063 B70-10423 04
Adhesive for aluminum withstands
cryogenic temperatures
M-FS-16848 B72-10346 04
A monostain test apparatus
M-FS-24221 B72-10679 06

HILLENBRAND, L. J.

Continuous catalytic decomposition of
methane
ARC-10339 B73-10016 03

HILLMAN, J. L.

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MSC-15955 B70-10466 08

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probe
MSC-13443 B70-10622 03

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be sealed to common metals
LEWIS-10698 B70-10429 08
High temperature glass coatings for
superalloys and refractory metals
LEWIS-10700 B70-10430 08

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Improved design of electrophoretic
equipment for rapid sickle-cell-anemia
screening
GSFC-11794 B73-10225 02

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Partitioning
LEWIS-12072 B73-10314 04

HIRSHFIELD, S. M.

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is base for new polymers
NPO-10998 B71-10184 04
A new metalation complex for organic
synthesis and polymerization reactions
NPO-10313 B71-10210 04
Initiation of polymerization by
tetrabutylammonium p-lithophenoxide
ARC-10553 B72-10223 04

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Real-time pair-feeding of animals
ARC-10302 B72-10298 05

HO, W. W.

Nondestructive measurement of capillary
tube internal diameter
LANGLEY-11647 B75-10156 02

HOARD, E. G.

Technical management techniques for
identification and control of industrial safety
and pollution hazards
M-FS-21883 B72-10588 05

HOBART, H. F.

Small turbing-type flowmeters for liquid
hydrogen
LEWIS-11535 B72-10331 06
Use of small turbine-type flowmeters to
measure flow in large pipes
LEWIS-11851 B72-10631 06
An optical quality meter suitable for
cryogenic liquids
LEWIS-11814 B72-10686 06

HOBSON, Z. A.

Hydraulic brake safety valve
M-FS-16444 B70-10207 07

HOCH, G. C.

Safe suspension of specimens or clusters
during dynamic testing - A concept
M-FS-15110 B70-10559 07

HOCHMAIR, E. S.

Integrable power gyrator
M-FS-22342 B73-10159 02
Gyrator circuit using field effect
transistors
M-FS-21433 B73-10161 02
Integrated p-channel MOS gyrator
M-FS-22343 B73-10217 02

HODGE, P. W.

A method for economic evaluation of
redundancy levels for aerospace systems
KSC-10754 B73-10067 09

HODGES, D. H.

New design of hingeless helicopter rotor
improves stability
ARC-10807 B75-10132 06

HOEFT, R. F.

N-body U and K matrix program
LEWIS-11438 B73-10012 09

HOFF, R. G.

High-temperature rapid-response
thermocouple for reducing atmospheres
NUC-10530 B70-10564 03
Inexpensive high-temperature furnace for
thermocouple calibration
NUC-10372 B71-10046 03

HOFFDITZ, T.

Automated Data Management
Information System (ADMIS)
KSC-10619 B73-10053 09

HOFFLER, G. W.

Automated analysis of blood pressure
measurements (Korotkov sound)
MSC-13999 B72-10756 05
Computer program for analysis of
vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09

HOFFMAN, A. C.

Self-protecting solid state isolated
switch
LEWIS-12268 B74-10069 01

HOFFMAN, C. A.

Metal-metal reinforced laminar
composites
LEWIS-11790 B73-10068 04

HOFFMAN, D. G.

A reusable prepositioned ATP reaction
chamber
HQ-10660 B72-10525 05

HOFFMAN, I. S.

A self-supporting strain transducer
LANGLEY-11263 B73-10201 06
Miniature biaxial strain transducer
LANGLEY-11648 B74-10180 01

HOFFMAN, J. K.

Instrument for measuring thin-film belt
lengths
NPO-13149 B73-10455 06

HOFFMAN, J. R.

High temperature autoclave vacuum
seals
M-FS-21131 B71-10433 08

HOFFMAN, R. G.

High voltage lightning grounding device
LEWIS-11282 B71-10136 01

HOFFMAN, T. E.

Mechanically and thermally stable maser
cavity resonator
HQ-10790 B72-10523 01

HOFFMANN, L. G.

New procedure for design of
self-adaptive control systems
LANGLEY-10255 B70-10115 02

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Use of thin plastic films at cryogenic
temperatures
LEWIS-11047 B72-10038 04

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Method of predicting ionization-type
vacuum gage sensitivity for various gases
LEWIS-12056 B73-10409 03

HOLBY, H. G.

Techniques for decoding speech
phonemes and sounds: A concept
GSFC-11898 B75-10086 02

HOLCOMB, J. E.

Information retrieval system
HQ-10426 B70-10556 09

HOLCOMB, L. B.

Satellite auxiliary propulsion systems
NPO-11744 B73-10023 06

HOLDEMAN, J. D.

Airflow distribution control for improved
turbine engine performance
LEWIS-11593 B72-10178 07

HOLDEMAN, L. B.

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devices
M-FS-23163 B75-10097 03
Fabrication of porous plugs for control
of liquid helium
M-FS-23218 B75-10163 04
Increasing terminal strip efficiency at
cryogenic temperatures
M-FS-23234 B75-10266 03

HOLDEN, D. G.

Miniature multicontact connectors
LANGLEY-10740 B70-10724 01

HOLDEN, G. G.

Balanced-bellows spirometer
XAC-01547 B72-10279 05

HOLDREN, R. H.

Inexpensive, large-diameter, radar
tracking and calibration spheres
XLA-11154 B71-10190 01

HOLDSWORTH, T.

Automatic lightning location system
AEC-10077 B72-10372 02

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Sensor capsule for diagnosis of gastric
disorders
HQ-10767 B72-10531 05
Microbial load monitor
MSC-14062 B75-10167 05

HOLIAN, J.

Reductive cleavage of the peptide bond
LRL-10026 B73-10194 04

HOLKO, K. H.

Practical method of diffusion-welding
steel plate in air
LEWIS-11387 B71-10455 08
Solid state welding of
dispersion-strengthened nickel alloys
LEWIS-11388 B71-10520 08
Improved diffusion welding and roll
welding of titanium alloys
LEWIS-11852 B73-10005 08

HOLLAHAN, J. R.

Rapid evaluation of reverse-osmosis
membranes
ARC-10659 B72-10413 04
Oxygen plasmas used to synthesize
superoxides
ARC-10686 B72-10570 04
Reverse-osmosis membranes by plasma
polymerization
ARC-10696 B72-10710 04
Moisture-resistant coatings for optical
components
ARC-10749 B73-10507 04

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Circuit permits independent adjustment of gain and offset at constant input impedance
ARC-10348 B72-10057 01
- HOLLECK, G. L.**
Improved operation of rechargeable oxygen electrodes
LEWIS-11619 B72-10479 01
- Carbon monoxide detector
M-FS-23090 B74-10268 04
- HOLLENBAUGH, R. C.**
Traffic control system and method
GSFC-10087 B74-10024 02
- HOLLEY, L. D.**
An automatic lightning detection and photographic system
KSC-10728 B73-10043 02
- Monitor for checking electric-field meters
KSC-10851 B75-10296 02
- HOLLIDAY, M. L.**
Alinement fixture for precision cutting of printed-wiring boards
LANGLEY-11658 B74-10290 01
- HOLLOWAY, J. H.**
Reactions of technetium hexafluoride with nitric acid, nitrosyl fluoride, and nitryl fluoride
ARG-10412 B70-10233 04
- HOLMAN, J. M. L.**
A low-altitude satellite interaction study
GSFC-11384 B71-10499 09
- HOLMES, J. K.**
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
- Synchronizer for random binary data
NPO-13286 B75-10325 02
- HOLMES, K. G.**
Circuit controls turn-on current
NPO-11339 B72-10079 01
- HOLMES, R. F.**
Automation of Bosch reaction for CO₂ reduction
M-FS-21674 B72-10666 04
- HOLMSTROM, F. R.**
Multiport semiconductor devices
ERC-10293 B70-10448 01
- HOLSTEN, J. R.**
Chemical treatment makes aromatic polyamide fabric fireproof in oxygen atmosphere
MSC-13571 B70-10540 04
- HOLT, J. D.**
Eye-controlled "teletypewriter"
LANGLEY-11564 B73-10514 02
- HOLWAY, H. P.**
Controlled release of free-falling test models
NPO-11314 B70-10077 07
- HOMEYER, W. G.**
Radioisotope thermionic power supply for spacecraft
ARC-10438 B72-10212 03
- HON, J. F.**
Properties of nonaqueous electrolytes
LEWIS-11017 B70-10080 04
- HONDA, T. S.**
Vortex servovalve for fluidic or electrical input
ARC-10155 B72-10173 07
- HONEYCUTT, C. R.**
Combined high vacuum/high frequency fatigue tester
LEWIS-11210 B71-10405 06
- HONG, J. P.**
Pattern recognition technique
NPO-11337 B71-10187 06
- Real-time speech analyzer
NPO-13465 B75-10205 02
- HONNEL, M. A.**
Isolated output for class-D dc amplifiers
M-FS-21616 B73-10331 02
- HOOGENBLOOM, L.**
Improved transducer for squeeze-film bearings
M-FS-20826 B71-10140 07
- HOOKS, J. C.**
Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01
- HOOP, J. M.**
Ultrasonic bone densitometer
M-FS-20994 B72-10450 05
- Spark ultrasonic transducer
M-FS-21233 B72-10594 04
- HOOPER, S. W.**
Manufacture of large, lightweight parabolic antennas
ARC-10741 B73-10375 08
- HOOPER, T. J.**
Metered oxygen supply aids treatment of domestic sewage
ARC-10024 B72-10557 05
- HOOVER, M. J.**
Phase-change materials handbook
M-FS-22064 B72-10464 04
- HOOVER, R. B.**
A multiple-plate, multiple-pinhole camera for X-ray gamma-ray imaging
M-FS-20546 B71-10439 02
- An automatic lightning detection and photographic system
KSC-10728 B73-10043 02
- HOOVER, W. M.**
Signal conditioner circuit for photomultiplier tube
XLA-10773 B70-10096 01
- HOPKINS, A. L., JR.**
Microprogram scheme for automatic recovery from computer error
MSC-13387 B70-10642 09
- HOPKINS, P. M.**
Four-phase differential phase shift resolver
JSC-14065 B73-10093 02
- HOPPER, W. A.**
A generalized approach to computer synthesis of digital holograms
M-FS-21973 B73-10101 09
- HOPPE, R. V.**
Welding high-strength aluminum alloys
M-FS-22918 B73-10481 04
- HORD, J.**
Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07
- HORDON, M. J.**
Electrical resistance determination of actual contact area of cold welded metal joints
HQ-10472 B70-10084 04
- HORIUCHI, H. H.**
Electronic integrator for gyro rate output voltages
NPO-11499 B72-10555 01
- HORNBACK, G. L.**
Airlock caution and warning system
M-FS-21576 B72-10467 02
- HORNE, W. B.**
A new method for measuring slipperiness of airport runways and other paved surfaces
LANGLEY-10795 B70-10712 06
- HORNER, J. L.**
Optical-noise suppression unit: A concept
MSC-12640 B75-10315 03
- HORNFECK, W. A.**
Space Ultrareliable Modular Computer (SUMC) instruction simulator
M-FS-22697 B74-10145 09
- HORTON, M.**
FORTRAN programming - A self-taught course
LANGLEY-10738 B71-10052 09
- HORTON, R. F.**
Improved quick-disconnect electrical connector
M-FS-20610 B70-10109 01
- Hydraulic valve lifter remover
M-FS-21377 B72-10110 07
- HORTON, T. E.**
A program for computing shock-tube gas dynamic properties
NPO-11068 B70-10133 09
- HOUGH, W. H.**
Electronic ripple indicator
KSC-10162 B71-10170 01
- Signal conditioner test set
KSC-10750 B73-10189 02
- HOUGH, R. L.**
High-strength large-diameter carbon-base fibers
LEWIS-11167 B71-10403 04
- HOUSEMAN, J.**
Computer-controlled mass spectrometer for on-line gas analysis
NPO-11427 B71-10191 03
- Gas generators produce hydrogen-rich fuel
NPO-13342 B75-10203 06
- Hydrogen-rich gas generators to reduce air pollution and improve gasoline economy
NPO-13560 B75-10208 06
- HOUSER, C. P.**
Miniature grinder for solid specimens
M-FS-20005 B71-10059 05
- HOUSTON, D. W.**
Preparation of thin polymer films for infrared reaction rate studies
MSC-15893 B70-10551 04
- HOUSTON, M. H.**
Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
- HOVEL, H. J.**
Improved photovoltaic devices, using transparent contacts
LANGLEY-11761 B75-10220 01
- HOWARD, E. A.**
A lightweight, high output soil sampler
NPO-10797 B71-10159 07
- HOWARD, F. S.**
Geysering inhibitor pipe
KSC-10615 B73-10110 07
- Floating baffle to improve efficiency of liquid transfer from tanks
KSC-10639 B73-10190 07
- HOWARD, J. C.**
Suppression of bending motion in elastic bodies
XAC-05632 B74-10070 06

- G-load indicator and warning device for aircraft
ARC-10806 B74-10171 02
- HOWARD, J. R.**
Wide-range tracking oscillator generates phase and frequency coherent output
M-FS-14518 B70-10451 02
- HOWARD, L. A.**
Calculation of the inertia tensor and center of gravity of complex bodies
NPO-10827 B70-10158 09
- HOWARD, R. T.**
Experimental determination of damping parameters of viscoelastic materials
M-FS-20534 B71-10297 04
- HOWARD, W. H.**
Weight simulator
ARC-10100 B72-10046 05
Programmed physiological infusion system
ARC-10447 B72-10126 05
- HOWARTH, J. T.**
Flame resistant elastic elastomeric fibers
MSC-13923-4 B72-10005 04
Flame resistant elastic elastomeric fiber
MSC-14331 B74-10157 04
- HOWE, J. T.**
Volume-reflecting dielectric heat shield
ARC-10803 B74-10074 04
- HOWELL, B. J.**
Ray tracing program with options for diffraction gratings
GSFC-11305 B71-10294 09
General optics evaluation program (GENOPTICS)
GSFC-12038 B75-10294 09
- HOWELL, J. Q.**
Microstrip antennas
LANGLEY-11284 B73-10179 01
- HOWELL, J. R.**
Directional control of radiant heat
LEWIS-90237 B70-10321 03
- HOWES, W. L.**
Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 B72-10579 05
- HOWLAND, B. T.**
Replaceable filters and cones for flared-tubing connectors
MSC-15750 B70-10548 07
- HOWS, G. E.**
Low heat-gain cryogenic-liquid transfer system
MSC-15165 B70-10306 07
- HOWSER, L. M.**
Program for the transient response of ablating axisymmetric bodies including the effects of shape change
LANGLEY-11049 B72-10068 09
- HRUBY, R. J.**
Coaxial inverted geometry epitaxial transistor
ARC-10330 B72-10056 01
Nondestructive testing of microtab welds
ARC-10176 B72-10296 02
- HRZYCAK, P.**
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- HRYNIEWIECKI, E.**
Triangular wheel locomotion mechanism
NPO-11366 B72-10714 06
- HSU, C. C.**
Calculation of incompressible fluid flow through cambered blades
M-FS-20503 B70-10093 06
- HSU, G. C.**
New urea-absorbing polymers for artificial kidney machines
NPO-13620 B75-10336 04
- HSU, Y. Y.**
Self-powered mixer for pressurized containers
LEWIS-12054 B73-10312 03
- HUANG, M. Y.**
New filter technique improves home television reception
MSC-13729 B71-10141 02
- HUBBARD, W. P.**
Tone-activated, remote, alert communication system
NPO-11132 B71-10307 02
- HUBER, C. S.**
Modification of physical properties of freeze-dried rice
MSC-13540 B71-10259 04
Preservation of flavor in freeze dried green beans
JSC-14149 B73-10092 05
Potassium food supplement
JSC-14391 B73-10177 05
- HUBER, W. C.**
Foldable patterns form construction blocks
MSC-13860 B71-10523 08
- HUCK, F. O.**
Multispectral facsimile reproducer
LANGLEY-10618 B70-10360 03
- HUDIS, M.**
Dielectric films improve life of polymeric insulators
ARC-10892 B75-10084 04
- HUDOCK, R. J.**
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
- HUDSON, O. K.**
Laser interferometry method for absolute measurement of the acceleration of gravity
M-FS-21225 B71-10232 03
- HUEBSCHER, R. G.**
Carbon dioxide concentrator
ARC-10245 B72-10194 05
- HUESCHEN, R. M.**
Sterile chamber operation with bio-isolator suit system
LANGLEY-11054 B72-10547 05
- HUFF, R. G.**
A simplified method for determining convective heat-transfer coefficients
LEWIS-11156 B70-10575 03
- HUFFAKER, R. M.**
Laser-Doppler gas velocimeter
M-FS-20583 B70-10143 02
- HUGGINS, C. T.**
Solid state television camera has no imaging tube
M-FS-21553 B72-10254 02
- HUGHES, C. T.**
Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04
- HUGHES, D. B.**
Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
- Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04
- HUGUENIN, D.**
Regulated-current dc power supply for gaseous-discharge lamps
GSFC-10293 B70-10239 02
- HUGULEY, J. C.**
A closed loop cryogenic environment pressure regulating system
MSC-13880 B72-10390 02
- HULL, F. E.**
Dual redundant core memory systems
MSC-13993 B72-10261 09
- HULTBERG, J. A.**
Thermal analysis system /TAS-1/ program
NPO-11849 B71-10386 09
- HULTGREN, N. W.**
Dynamic technique for measuring adsorption in a gas chromatograph
JSC-14083 B73-10339 04
- HULTZMAN, W. W.**
Characteristics and performance study of mass spectrometer residual gas analyzers
LEWIS-12393 B75-10185 03
- HUMBERT, J. E.**
Real-time pair-feeding of animals
ARC-10302 B72-10298 05
- HUMENIK, F.**
Gas turbine combustor insensitive to compressor outlet distortion
LEWIS-10286 B70-10312 07
- HUMPHREY, M. F.**
Processing for obtaining good quality water from sewage
NPO-13224 B75-10113 04
Liquid ethylene-propylene copolymers
NPO-13555 B75-10207 04
- HUMPHRIES, T. S.**
Stress corrosion cracking evaluation of precipitation-hardening stainless steel
M-FS-20667 B70-10140 04
- HUMPHRIES, W. R.**
Solar residential heating and cooling system
M-FS-23260 B75-10165 06
- HUMPHRY, D. E.**
Electrical instrument measures position and velocity of shock waves
ARC-10356 B71-10143 03
- HUNIU, S.**
Two-stage coaxial gas compressor
ARC-10426 B72-10210 06
- HUNSPERGER, R. G.**
GaAs transistors formed by Be or Mg ion implantation
LANGLEY-11204 B73-10442 01
- HUNT, J. G.**
High-temperature "hydrostatic" extrusion
NPO-10811 B70-10428 08
- HUNTER, C.**
Mechanism of operation of the TFE-bonded gas-diffusion electrode
HQ-10536 B70-10059 01
- HUNTER, W. F.**
Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
- HUNTON, W. D.**
Spectral emission measurement of igneous rocks using a spectroradiometer
M-FS-20837 B70-10661 04

- HURD, W. J.**
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02
Technique minimizes the effects of dropouts on telemetry records
NPO-11421 B72-10088 02
Code-regenerative clean-up loop for a ranging transponder
NPO-11707 B73-10141 02
Quasars as very-accurate clock synchronizers
NPO-13276 B75-10114 02
Synchronizer for random binary data
NPO-13286 B75-10325 02
- HURLEY, T. L.**
Chemical pretreatment for the distillation of urine
JSC-14225 B73-10224 04
Application of biological filters in water treatment systems
JSC-14226 B73-10404 05
- HUSSEY, J.**
Digital parallel-to-series pulse-train converter
MSC-12417 B71-10450 01
- HUSSEY, M. W.**
Backflushing system rapidly cleans fluid filters
JSC-14273 B73-10405 06
- HUST, J. G.**
High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
- HUTCHBY, J. A.**
Efficiency increased in new solar cell: A Concept
LANGLEY-11174 B74-10090 01
- HUTCHINSON, W. D.**
Manually operated elastomer heat pump
NPO-10677 B70-10270 03
- HUTCHISON, J. J.**
New type of trifunctional alcohol
NPO-10714 B72-10553 04
- HUTT, J. B.**
Improved fire-resistant coatings
GSFC-10072 B71-10198 04
- HWANG, C.**
Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 B75-10145 08
- HYMER, R. L.**
Audio signal processor
MSC-12223 B70-10180 01
Digital telemetry system eliminates data redundancy
MSC-12388 B71-10082 02
- HYMES, L. C.**
Concentric tubes cold-bonded by drawing and internal expansion
ARG-90033 B71-10050 08
- I**
- ICELAND, W. F.**
Dual current readout for precision plating
MSC-15673 B70-10392 01
Grain refinement control in gas-shielded arc welding of aluminum tubing
JSC-19095 B73-10508 08
- IDEN, R. B.**
Determination of hydroxyl content in impure magnesium oxide
NPO-10774 B70-10017 04
- IEROKOMOS, N.**
Ion masking improves resolution in quadrupole mass spectrometers
GSFC-11406 B73-10181 03
- ILES, P. A.**
Oxygen-layer structure improves lithium-doped silicon solar cells
NPO-11403 B72-10085 03
Introduction of lithium into the front surface of solar cells
NPO-11404 B72-10086 02
- IMIG, L. A.**
Strain gage attachment by spot welding reduces the fatigue strength of Ti-6Al-4V, Rene 41, and Inconel X
LANGLEY-10930 B72-10339 04
Fatigue testing device
LANGLEY-10426 B73-10047 07
- IMPRESCIA, R. J.**
Producing graphite with desired properties
NUC-11001 B71-10042 04
- IMUS, R. E.**
A lightweight, high output soil sampler
NPO-10797 B71-10159 07
Low-friction ball-and-socket
NPO-11348 B72-10081 08
Nematic liquid crystals for optical shutters: A concept
NPO-11367 B72-10083 03
Planetary rock corer and drill concepts
NPO-11416 B72-10398 07
- INGE, A. T.**
Automated data acquisition and reduction system for torsional braid analyzer
LANGLEY-11578 B75-10073 02
- INGEBO, R. D.**
Air-atomizing splash-cone fuel nozzle reduces pollutant emissions from turbojet engines
LEWIS-11918 B73-10200 06
Improved air atomizing splash-groove fuel injector reduces pollutant emissions from turbojet engines
LEWIS-12417 B75-10190 06
- INGHAM, J. D.**
Method for estimating solubility parameter
NPO-11647 B73-10022 04
New polymer systems: Chain extension by dianhydrides
NPO-13046 B74-10077 04
Liquid ethylene-propylene copolymers
NPO-13555 B75-10207 04
- INGLIS, A. L.**
Electroshock protection circuit
JSC-14222 B73-10261 02
- INGRAM, M.**
Ionene treatment of surfaces stimulates cell growth
NPO-13421 B75-10121 04
- INMAN, R. V.**
Flaw detection by mechanical resonant measurement
M-FS-19218 B73-10440 03
- INNES, G. M.**
Two-directional-flow, axial-motion-joint flow liner
M-FS-16215 B70-10166 06
- IRICK, S. C.**
Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06
- IRVINE, C. N.**
Techniques for forming skin panels for large-diameter cylinders from aluminum-2014
M-FS-14385 B70-10243 04
- IRWIN, J. D.**
Stereoscopic computer graphics display system
M-FS-22322 B73-10526 09
- IRWIN, K.**
Investigation of the reactivity of organic materials in liquid oxygen
M-FS-20576 B70-10285 04
- ISHIMARU, A.**
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03
- ISHIMOTO, T.**
SINDA, Systems Improved Numerical Differencing Analyzer
MSC-13805 B72-10736 09
- ITO, I.**
Design handbook for gaseous fuel engine injectors and combustion chambers
LEWIS-12154 B73-10412 07
- IWASAKI, N.**
Thumb-actuated control device
ARC-10019 B70-10407 01
- J**
- JAAX, J. R.**
An efficient prebreathing apparatus for humans during decompression
MSC-14151 B72-10690 05
- JACK, J. R.**
High solar intensity radiometer
LEWIS-11533 B72-10130 03
- JACKSON, A.**
Carrier extraction circuit
JSC-14262 B73-10094 02
- JACKSON, C. E., JR.**
View factor computer program (VIEW)
GSFC-11910 B75-10032 09
- JACKSON, C. M., JR.**
Technique for the integral casting of pressure instrumentation in wind-tunnel models
LANGLEY-10812 B71-10247 08
Misfit and miss-drag programs
LANGLEY-10932 B72-10153 09
Computer program to determine pressure distributions and forces on blunt bodies of revolution
LANGLEY-11197 B73-10362 09
- JACKSON, C. T.**
Overlay board for control consoles
ARC-10007 B72-10191 02
- JACKSON, E. D.**
Method of calculating blade-to-blade plane flow in centrifugal pump
M-FS-18087 B70-10124 06
- JACKSON, J. K.**
Prediction of gas leakage of environmental control systems
HQ-10270 B70-10201 05
Design method for adsorption beds
HQ-10269 B70-10294 04
- JACKSON, R. E.**
Boron aluminum composite structures
M-FS-21571 B72-10386 04

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Heater improves cold-temperature capacity of silver-cadmium batteries
GSFC-11913 B75-10071 01
- JACOBS, A. J.**
Effects of crystal defects on stress-corrosion susceptibility in aluminum alloy 7075
M-FS-18794 B70-10506 04
The mechanism of stress-corrosion cracking in 7075 aluminum alloy
M-FS-18614 B70-10527 04
- JACOBS, G.**
Automatic cross-sectioning and monitoring system locates defects in electronic devices
GSFC-11221 B71-10221 01
- JACOBSEN, R. T.**
An equation of state for oxygen and nitrogen
JSC-14465 B73-10394 04
- JACOBSON, D. S.**
Transistor bonding pad configuration for uniform injection and low inductance
GSFC-10790 B70-10181 01
Hermetic-coaxial package design for microwave transistors
GSFC-10791 B73-10427 01
- JACOBSON, H. B.**
Support for equipment - Quick mounting with quick release
MSC-15874 B70-10542 07
- JACOBSON, N. F.**
Multiple reaction mass and isolation system
M-FS-24119 B72-10441 06
- JACOBSON, T. P.**
Graphite fiber-polyimide composite rod end bearings for high-temperature high-load applications
LEWIS-12514 B75-10151 06
- JACQUIER, I. D.**
Mathematical techniques for estimating operational readiness of complex systems
MSC-17694 B72-10335 09
- JAEGER, K.**
Computer program analyzes and monitors electrical power systems (POSIMO)
GSFC-11505 B72-10610 09
- JAFFE, B.**
Computer programs for determination of transonic flow parameters in a convergent-divergent nozzle
NPO-10895 B70-10132 09
- JAHNSEN, V. J.**
Liquid sample processor
NPO-13136 B74-10278 05
Improved extraction technique for biological fluids
NPO-13084 B75-10045 05
- JAIVIN, G. I.**
A general purpose maneuver turns computer program
NPO-13213 B73-10088 09
- JAKSTYS, V.**
Composite antenna feed system operates from VHF to X-band
GSFC-11046 B71-10410 02
- JAMESON, A.**
Lift distribution in a rectangular jet
ARC-10424 B71-10030 09
- JANKOWSKI, H.**
Extended range harmonic filter
LEWIS-12064 B73-10313 02
- JANSSEN, W. A.**
High voltage solid-state relay
LEWIS-12096 B74-10006 01
- JANUS, J.**
A sonic transducer to detect fluid leaks
KSC-10704 B72-10376 01
- JAQUA, V. W.**
Dispersion ring reduces injector orifice-to-orifice flow variation
MSC-15953 B72-10117 07
- JARRETT, O., JR.**
Dye laser remote sensing of marine plankton
LANGLEY-11382 B73-10359 05
- JAUAN, A.**
Stabilizing a gaseous optical laser
XGS-03644 B73-10517 03
- JAVET, P.**
Oxygen-hydrogen fuel cell with an iodine-iodide cathode - A concept
HQ-10379 B70-10246 02
- JAWORSKI, W.**
Performance of silicon solar cell assemblies
NPO-11847 B72-10186 01
- JAYNES, D. N.**
Laser beam hydrocarbon detector
ARC-10156 B70-10631 03
- JEANE, H. L.**
Advanced-priority interrupt module
NPO-13067 B74-10165 02
- JEDLICKA, J. R.**
Metal tube used as solar engine
ARC-10461 B73-10493 03
- JELINEK, D.**
Optimization of fluid line sizes with pumping power penalty IBM-360 computer program
MSC-17930 B72-10722 06
Pressure drop and pumping power for fluid flow through round tubes
M-FS-24172 B73-10186 09
- JENKINS, R. K.**
Improved thermally conducting electron transfer polymers
GSFC-11304 B72-10291 04
- JENKINS, R. V.**
Flat device for heat concentration or dispersion
LANGLEY-11699 B74-10291 03
- JENNINGS, T. J.**
Low temperature catalytic ignition of hydrogen and oxygen
ARC-10492 B72-10127 03
Comparison of catalyst activity
ARC-10493 B72-10201 04
- JENSEN, K. A.**
Amplifier for signal from thin film transducer
LEWIS-11494 B72-10463 01
- JENSEN, W. M.**
Large boron-epoxy filament-wound pressure vessels
NPO-11900 B73-10038 08
- JENTNER, T. A.**
Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- JESCH, C. D.**
Current switch has built-in time delay: A concept
MSC-17324 B72-10453 01
- JESSEE, R. D.**
Pulse-rate averaging circuit
GSFC-10718 B70-10370 01
- JESSEP, D. C.**
Techniques for improving reliability of computers
M-FS-21326 B72-10109 02
- JETER, J. D.**
A versatile flammability test chamber
KSC-10126 B73-10111 06
- JEWETT, H. R., JR.**
Simple, shock-free, quick-release connector - A concept
LEWIS-11178 B71-10146 07
- JEWETT, R. P.**
Electron fractography used to examine nickel-base alloys
M-FS-18649 B70-10571 04
- JEX, H. R.**
Eye point-of-regard system
ARC-10360 B71-10476 05
- JIRBERG, R. J.**
Wide-range nuclear magnetic resonance detector
LEWIS-11513 B72-10478 03
- JOCKE, R. F.**
Low-cost, portable fire hose tester
LEWIS-12365 B75-10003 06
- JOHNS, C. E.**
Continuously variable voltage-controlled phase shifter
NPO-11129 B70-10073 01
- JOHNS, H. E.**
Lightweight orthotic braces
LANGLEY-11894 B75-10303 05
- JOHNSON, B. L.**
Hip-joint simulator accurately duplicates human walking pattern
LEWIS-12515 B75-10148 05
- JOHNSON, C. B.**
A magnetically focused image tube employing an opaque photocathode
GSFC-11602 B73-10255 02
- JOHNSON, C. C.**
Moisture-resistant coatings for optical components
ARC-10749 B73-10507 04
Amplitude-steered, pseudophased antenna array
GSFC-11446 B74-10255 01
- JOHNSON, C. D.**
Chebyshev minimax control theory
M-FS-20639 B70-10315 03
- JOHNSON, D.**
Four-dimensional worldwide atmospheric models: ANYPT and ANYRG
M-FS-22838 B75-10093 09
- JOHNSON, D. A.**
Laser velocimeter measurements of high-speed compressible flows
ARC-10781 B75-10141 03
- JOHNSON, D. F.**
Solar sensor with autocollimator
ARC-10148 B72-10192 03
- JOHNSON, E. F.**
Energy absorber uses expanded coiled tube
AEC-10044 B72-10239 06
- JOHNSON, G. S.**
Medical vest broadens treatment capability
KSC-10577 B70-10529 05
- JOHNSON, H. E.**
Improved fiberglass-to-metal joint produces lighter stronger fiberglass strut
LEWIS-11661 B73-10258 08
- JOHNSON, H. L.**
Pneumatic amplifier controls high pressure fluid supply
MSC-12121 B71-10081 07

- JOHNSON, M. D.**
Reliability analysis based on operational success criteria
ARC-10490 B72-10214 09
- JOHNSON, R. C.**
Computer program for natural gas flow through nozzles
LEWIS-11534 B72-10362 09
Total-pressure measurement in pulsating flows
LEWIS-12077 B73-10252 03
- JOHNSON, R. E.**
Modified faceplate assembly for stud-welding gun
M-FS-16725 B70-10044 08
- JOHNSON, R. L.**
Filled polymers for bearings and seals used in liquid hydrogen
LEWIS-10887 B70-10573 04
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
High speed, self-acting, face-contact shaft seal has low leakage and very low wear
LEWIS-11598 B72-10114 07
Computer program for calculating the temperature field of face seals
LEWIS-11110 B72-10483 09
- JOHNSON, V. J.**
Uniform data system standardizes technical computations and the purchasing of commercially important gases
NUC-10549 B70-10333 04
- JOHNSON, W. R.**
Submerged gas injector expels cryogenic liquids from tanks
LEWIS-11231 B71-10219 07
An experimental 100 kilowatt wind turbine generator
LEWIS-12509 B75-10147 03
- JOHNSTON, A. R.**
Light-direction sensor based on birefringency
NPO-11201 B73-10131 03
- JOHNSTON, K. D.**
Laser net - A concept for monitoring wingtip vortices on runways
M-FS-20857 B71-10360 02
- JOHNSTON, N. J.**
Automated data acquisition and reduction system for torsional braid analyzer
LANGLEY-11578 B75-10073 02
- JOHNSTON, R. S.**
Improved heat-resistant garments
MSC-12109 B70-10544 08
- JOHNSTON, W. V.**
A heat flow calorimeter
GSFC-11434 B73-10221 03
- JOLLEY, J. E.**
Determination of gas volume trapped in a closed fluid system
MSC-15685 B71-10094 06
- JOLLY, W. O.**
Acoustic emission used as weld quality monitor
AEC-10018 B72-10427 08
- JONCAS, K. P.**
Dynamic power load simulator
JSC-14285 B73-10305 02
High-power ac/dc variable load simulator
MSC-14788 B75-10108 02
- JONES, C. E.**
Snap dynamics
M-FS-21531 B72-10265 09
- JONES, C. K.**
Magnets with stabilized conductors
HQ-10727 B72-10465 03
- JONES, G.**
Thin spray film thickness measuring technique
M-FS-20842 B71-10062 08
- JONES, G. M.**
Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03
- JONES, J. F.**
Polyimide polymers provide improved ablative materials
LEWIS-10861 B70-10300 04
Polyimide polymers provide higher char yield for graphitic structures
LEWIS-10860 B70-10330 04
- JONES, J. L.**
Stereoscopic television system
ARC-10160 B73-10499 02
- JONES, J. W., JR.**
Two techniques for digital filter design
M-FS-20015 B70-10314 01
- JONES, N. D.**
High-temperature, long-life thyratron
LEWIS-11327 B72-10134 01
Self-healing fuse
LEWIS-11964 B74-10004 02
- JONES, P. A.**
Vibrational transfer functions for complex structures
M-FS-20744 B72-10648 09
- JONES, P. J.**
Vibrational transfer functions for base excited systems
M-FS-21432 B71-10441 09
- JONES, P. W.**
Microbial load monitor
MSC-14062 B75-10167 05
- JONES, R.**
Swirl-can combustor segment
LEWIS-11082 B70-10322 07
- JONES, R. A.**
New method for determining thermophysical properties of test specimens
LANGLEY-11053 B73-10447 04
Automated electronic system for measuring thermophysical properties
LANGLEY-11883 B75-10160 03
- JONES, R. J.**
Soluble high molecular weight polyimide resins
LEWIS-11056 B70-10504 04
New polyimide polymer has excellent processing characteristics with improved thermo-oxidative and hydrolytic stabilities
LEWIS-11323 B72-10175 04
Low-void polyimide resins for autoclave processing
LEWIS-11665 B72-10728 04
- JONES, S. C.**
Marshall information retrieval and display system (MIRADS)
M-FS-22536 B74-10043 09
- JONES, T. B.**
An electrohydrodynamic heat pipe
ARC-10601 B72-10251 03
- JONES, W. C., III**
Table-lookup algorithm for pattern recognition: ELLTAB (Elliptical Table)
MSC-14866 B75-10236 03
- JONES, W. J.**
Extendible probe for atmosphere sampling
ARC-10829 B74-10054 03
Toroidal equipment packaging
ARC-10828 B74-10055 03
- JONKE, A. A.**
Fluidized-bed combustion reduces atmospheric pollutants
AEC-10085 B72-10431 04
- JONKER, W. J.**
Application of calibration masks to TV vidicon tube
KSC-10589 B71-10404 02
- JORDON, T. M.**
Monte Carlo program for the transport of neutrons and gamma rays
LEWIS-11403 B71-10490 09
- JOSEPH, A. E.**
Time Data Sequential Processor /TDSP/
NPO-11327 B70-10720 09
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- JOSLYN, A. W.**
Boiler for generating high quality vapor
LEWIS-11345 B72-10135 06
- JUDY, P. F.**
Determination of bone mineral mass in vivo
MSC-14276 B75-10168 05
- JUHASZ, A. J.**
Airflow distribution control for improved turbine engine performance
LEWIS-11593 B72-10178 07
Turbulent mixing film cooling correlation
LEWIS-11417 B72-10326 07
- JUNK, G. A.**
A method of isolating organic compounds present in water
AEC-10010 B72-10044 04
- JUNKIN, B. G.**
Method for nonlinear exponential regression analysis
M-FS-21965 B72-10622 09
- JUVINALL, G. L.**
Nongassing NiCd battery cell
NPO-11853 B75-10174 04

K

- KABANA, W. B.**
Butt welder for fine gage wire
LANGLEY-10103 B70-10136 08
- KADO, R. T.**
Log amplifier instrument measures physiological biopotentials over wide dynamic range
ARC-10032 B70-10508 01
- KADRMAS, K. A.**
Self-calibrating remote atmospheric electromagnetic probe and data acquisition system
M-FS-21212 B72-10665 03
Binary-selectable detector holdoff circuit
M-FS-22898 B73-10487 02
- KAEMMING, T. A.**
Propulsion sizing program
MSC-14016 B72-10605 09

KAGEYAMA, Y.

Improved method for calculating pump thermodynamic suppression head
M-FS-20852 B71-10239 07

KAHLE, V. E.

Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 B71-10212 08

KAHN, D. R.

A permeable rotating-wheel solvent extractor
LRL-10033 B72-10343 04

KAISER, R.

Preparation of stable colloidal dispersions in fluorinated liquids
HQ-10580 B72-10529 04

Ferrofluid separator for nonferrous scrap separation
LANGLEY-11523 B73-10463 07

KALFAYAN, S. H.

Effects of the thermal sterilization procedure on polymeric products
NPO-11688 B71-10362 04

High-temperature gas/liquid stress relaxometers
NPO-13168 B73-10457 04

Strain gauge sensitivity improved by using a composite beam
NPO-13170 B74-10297 07

KAMMERER, C. C.

Ultrasonic detection of flaws in large structural areas
MSC-19499 B75-10201 06

KAMOTANI, Y.

Investigations of a turbulent jet in a crossflow
LEWIS-11680 B72-10437 06

KANDLER, H. A.

Dopant for sodium niobate capacitor dielectric
MSC-11773 B70-10190 01

KANISCHAK, G.

High-sensitivity receiver for CO₂ laser communications
GSFC-11455 B73-10223 02

KAO, G. C.

Mechanical impedance and acoustic mobility measurement techniques of specifying vibration environments
M-FS-22016 B73-10059 06

KAREL, S.

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ARC-10960 B75-10143 09

KARLE, D. W.

A flame-resistant modified polystyrene
MSC-14903 B75-10320 04

KASPARAS, R.

Multilayered printed circuit boards inspected by X-ray laminography
M-FS-20849 B71-10226 02

KATCHIS, L.

A differential ECG amplifier with single-ended output
ARC-10411 B72-10061 05

Frequency switch keyed oscillator
ARC-10412 B72-10124 01

KATOW, M. S.

Compensating subreflector for two-reflector antennas: A concept
NPO-11503 B72-10093 06

KATSANIS, T.

Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09

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LEWIS-10977 B71-10402 09

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LEWIS-11635 B72-10586 09

Computer program for calculating velocities and streamlines on mid-channel flow surface of axial or mixed-flow turbomachine
LEWIS-12129 B74-10130 09

KATZ, S.

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ERC-10211 B70-10372 01

Low-power integrated-circuit driver for ferrite-memory word lines
ERC-10212 B70-10374 09

KATZBERG, S. J.

Automatic focus control for facsimile camera
LANGLEY-11213 B73-10361 02

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LANGLEY-11612 B74-10094 03

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LANGLEY-11768 B75-10223 03

KATZMAN, H.

Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04

KAUFMAN, J. W.

Peak wind speed anemometer /maxometer/
M-FS-20916 B71-10023 07

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M-FS-23059 B74-10267 06

KAUMEYER, R. A.

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MSC-15562 B70-10490 04

KAUTZ, H. E.

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LEWIS-10964 B70-10029 01

KAVANAUGH, W. P.

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ARC-10359 B70-10637 09

KAZAROFF, J. M.

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LEWIS-12087 B74-10018 08

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LEWIS-12331 B74-10126 08

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LEWIS-11368 B72-10069 09
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M-FS-22873 B74-10189 09
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GSFC-11302 B73-10332 06
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GSFC-10097 B70-10521 01
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LRL-10024 B72-10312 03
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M-FS-21363 B71-10339 04
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M-FS-22264 B72-10696 01
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M-FS-16063 B70-10423 04
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M-FS-18608 B70-10228 07
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HQ-10582 B72-10526 05
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M-FS-21847 B72-10613 06
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LEWIS-11469 B72-10379 03
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system /MIS/
M-FS-21477 B71-10431 09
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system (MIRADS)
M-FS-22536 B74-10043 09
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in a stiffened cylindrical shell
M-FS-16172 B70-10394 06
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ARC-10408 B72-10208 03
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LANGLEY-11013 B71-10501 09
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M-FS-22678 B73-10518 06
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LEWIS-11268 B72-10745 08
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LEWIS-11290 B72-10133 06
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LEWIS-11267 B72-10256 04
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NPO-13309 B75-10117 04
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M-FS-22910 B74-10190 09
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M-FS-22044 B72-10697 01
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M-FS-21791 B73-10100 02
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NPO-11943 B72-10073 09
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NPO-11461 B74-10097 02
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M-FS-21077 B71-10482 04
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NPO-11387 B72-10700 03
- LANDES, H. S.**
The thin film microwave iris
LANGLEY-10511 B72-10548 02
- LANDES, L. G.**
Wideband wattmeter for instant measurement of real power
LEWIS-11698 B72-10737 01
- LANDES, R. E.**
Differential expansion fitting for cryogenic liquid tanks
LEWIS-11260 B71-10268 08
Design Guide for glass fiber reinforced metal pressure vessel
LEWIS-12042 B73-10311 08
- LANDGREBE, D. A.**
Multispectral data analysis: LARSYS III
MSC-14823 B75-10235 03
- LANDINGHAM, R. L.**
Improved method for producing metal-reinforced ceramics
AEC-10070 B72-10234 04
- LANDIS, A. L.**
New hyperthermal thermosetting heterocyclic polymers
LANGLEY-10221 B70-10403 04
- LANE, J. W.**
Wide-range dynamic pressure sensor
ARC-10263 B72-10196 03
- LANG, E. J.**
Low-cost orbiting grinder for cutting ducts
M-FS-20684 B70-10126 07
- LANGE, D. R.**
Split radius-form blocks for tube benders
MSC-15773 B70-10038 08
- LANGE, R.**
High-sensitivity receiver for CO2 laser communications
GSFC-11455 B73-10223 02
- LANGLEY, W. R.**
Portable headset microphone checker
KSC-10699 B75-10254 02
- LANHAM, R. N.**
Mounting technique for pressure transducers minimizes measurement interferences
ARC-10933 B75-10145 08
- LANZO, C. D.**
A stabilized low-frequency alternating-current electric arc
LEWIS-10442 B70-10065 01
- LAPIN, A.**
Liquid and gaseous oxygen safety review
LEWIS-12041 B73-10310 04
- LARK, R. F.**
Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04
Advanced fiber-composite hybrids--A new structural material
LEWIS-12118 B74-10247 04
- LARSON, R. W.**
Treatment of blueberries prior to freeze dehydration
MSC-13573 B71-10387 05
Development of non-sweet, flavored food cubes
MSC-14002 B71-10521 05
Quick, easy to prepare freeze-dried soups
MSC-14003 B72-10017 05
- LARSON, S. G.**
Ferrite attenuator modulation improves antenna performance
NPO-12011 B70-10702 01
- LARSON, T. P.**
Backflushing system rapidly cleans fluid filters
JSC-14273 B73-10405 06
- LASALVIA, E. A.**
Loudness (annoyance), prediction procedure for steady sounds
LEWIS-11761 B72-10579 05
- LASSEN, H. A.**
Solar array deployment from a spinning spacecraft
ARC-10787 B74-10048 06
Spacecraft attitude determination by fanscan technique
ARC-10827 B74-10198 02
- LASSETER, G. L.**
Fortran Automatic Code Evaluation System (FACES)
M-FS-22910 B74-10190 09
- LATORRE, V. R.**
Laser frequency modulation with electron plasma
AEC-10079 B72-10373 03
- LATT, C. R.**
Executive computer program for linking independent computer programs: ODINEX
LANGLEY-11324 B75-10194 09
- LATTANZI, R. R.**
Improved electrodes for skin contacts
M-FS-21926 B72-10698 05
- LAUDENSLAGER, J. B.**
Chemical-ionization visible and ultraviolet gas lasers: A concept
NPO-13289 B75-10115 03
- LAUE, E. G.**
Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05
- LAUE, T. M.**
Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05

- LAUGHLIN, C. R.**
Traffic control system and method
GSFC-10087 B74-10024 02
- LAURENCE, J. C.**
Development of superconductive magnets
LEWIS-11170 B70-10678 03
New twisted intermetallic compound superconductor: A concept
LEWIS-11015 B72-10282 04
- LAVE, E. G.**
Quartz crystal microbalances to measure wind velocity and air humidity
NPO-13462 B75-10124 03
- LAVE, H.**
Optical monitoring system
M-FS-21692 B73-10050 03
- LAVENDER, A. R.**
Small, low cost, artificial kidney
AEC-10011 B72-10371 05
- LAVERICK, C.**
High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Stranded superconducting cable of improved design
ARG-90108 B70-10070 01
- LAWHITE, E.**
A rapid, precise, reciprocating-movement color filter system
GSFC-11255 B72-10497 07
- LAWRENCE, F.**
Nondestructive leak testing
LANGLEY-11561 B73-10464 06
- LAWRENCE, T. R.**
Mach-Zehnder optical configuration with Brewster window and two quarter-wave plates
M-FS-22741 B73-10417 03
- LAWSON, A. B.**
The weld-brazing metal joining process
LANGLEY-11072 B72-10683 08
- LAWSON, D. D.**
Method for estimating solubility parameter
NPO-11647 B73-10022 04
- LAYLAND, J. W.**
Communications link for SDS 900 series computers
NPO-11161 B70-10163 02
- LAYTON, R. E.**
New concept in brazing metallic honeycomb panels
LANGLEY-10957 B73-10358 08
- LEAR, W. M.**
A study of accuracy in selected numerical-analysis integration techniques
MSC-14802 B75-10273 09
- LEAVITT, L. D.**
Eye-controlled "teletypewriter"
LANGLEY-11564 B73-10514 02
- LEBAN, M. I.**
Stabilization of porous glass reverse-osmosis membranes
ARC-10646 B72-10309 04
Purification of contaminated water by filtration through porous glass
ARC-10655 B72-10412 04
- LEBLANC, L. P.**
Multiple-compartment venting program
MSC-19428 B75-10234 06
- LEE, A. C.**
An economical vent cover
M-FS-20692 B72-10348 07
- LEE, A. Y.**
AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
- LEE, C. H.**
Survey of aircraft electrical power systems
LEWIS-11678 B72-10383 02
- LEE, D. T.**
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- LEE, H. Q.**
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
- LEE, J.**
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
- LEE, R. D.**
Metal detector system
ARC-10265 B70-10511 01
Intruder detection system
ARC-10097 B70-10638 02
Miniature implantable instrument measures and transmits heart function data
ARC-10201 B71-10163 05
Improved ultrasonic biomedical measuring apparatus
ARC-10597 B72-10695 05
Bio-isolated DC operational amplifier
ARC-10596 B74-10112 01
Reference apparatus for medical ultrasonic transducer
ARC-10753 B74-10197 01
- LEE, S. M.**
Polymeric coatings using electronic excitation
HQ-10698 B72-10257 04
- LEE, W. M.**
Evaluating foam heterogeneity
AEC-10046 B72-10365 04
- LEE, W. S.**
Reduction of porosity in aluminum weldments
MSC-14198 B72-10734 08
Plastic covering on airfoil structure provides smooth uninterrupted surface
MSC-12631 B74-10270 08
- LEEPER, W. A.**
High-efficiency multifrequency feed
GSFC-11909 B74-10288 02
- LEES, W. L.**
Self-protected electrodes limit field-emission current
ERC-10015 B74-10253 01
- LEFTON, L.**
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09
- LEGER, L. J.**
Detection of cracks in surface insulation
MSC-14187 B74-10095 04
Method of attaching insulation tiles
MSC-12619 B75-10104 04
- LEHMAN, M. T.**
Semi-organic structural adhesive for aluminum
M-FS-21328 B73-10071 04
- LEHWALT, M. F.**
'Dry-column' chromatography of plant pigments
ARC-10780 B73-10271 04
- LEIBFRITZ, E. R.**
Molding procedure for casting a variety of alloys
ARC-10358 B70-10512 08
- LEISER, D.**
Reusable silica surface-insulation material
ARC-10721 B73-10504 04
- LEMKEY, F. D.**
Superior high temperature properties available in directionally solidified nickel-base eutectic alloys
LEWIS-12562 B75-10246 04
- LEMSON, P. H.**
Improved modified turnstile antenna
MSC-12209 B70-10482 01
- LENNHERR, F. K.**
Computer program for the design of axial-flow turbines
LEWIS-11029 B70-10669 09
- LENKSZUS, F. R.**
Ultrastable reference pulser for high-resolution spectrometers
ARG-10364 B70-10216 01
- LENN, P. D.**
Low pressure arc electrode
ARC-10012 B70-10329 01
- LENNING, J. J.**
Volumetric calibration of a propellant utilization system
M-FS-14943 B70-10156 06
- LENNON, C. L.**
Time-of-arrival lightning activity location system
KSC-11006 B75-10297 02
- LENT, W. E.**
High voltage electrical insulation coating for refractory materials
LEWIS-11479 B72-10290 04
- LEON, H. A.**
Real-time pair-feeding of animals
ARC-10302 B72-10298 05
- LEONARD, E. T.**
Laser device provides accurate reference to true gravitational vertical
ARC-10444 B71-10479 07
- LEONARD, G. E.**
Ceramic backup ring prevents undesirable weld-metal buildup
NUC-10357 B71-10117 08
- LEONARD, W. H.**
Noncontact torque measurement using stroboscopic techniques
MSC-12282 B72-10332 07
- LERMA, G.**
Cryogenic line insulation made from prefabricated polyurethane shells
MSC-19523 B75-10110 06
- LEROY, M. J., JR.**
Continuous monitor for gas ratios in a mixture
LEWIS-11095 B72-10229 05
- LESCO, D. J.**
Data acquisition from high-speed rotating shafts
LEWIS-10886 B70-10043 01
Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 B73-10411 02
Rotating turbine blade pyrometer
LEWIS-12218 B74-10068 01
- LESNIEWSKI, R. J.**
Data processor with conditionally supplied clock signals
GSFC-10975 B74-10021 02

- LESSMANN, G. A.**
Inhibiting Kirkendall void growth in welded bimetallic structures
LEWIS-11573 B75-10006 08
- LESSMANN, G. G.**
Fabrication of complex structures or assemblies by Hot Isostatic Pressure (HIP) welding
LEWIS-11490 B74-10124 04
- LESTER, J.**
Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06
- LEU, R. K.**
Transmitter switch for high-power microwave output
NPO-13439 B75-10122 02
- LEVIN, H.**
Improved magnesia for thermal control coatings
ARC-10677 B72-10424 04
Refractory porcelain enamel passive-thermal-control coating for high-temperature superalloys
M-FS-22324 B73-10215 04
- LEVINE, D. A.**
Information retrieval system
HQ-10426 B70-10556 09
- LEVINE, M. W.**
System automatically tunes hydrogen masers
HQ-10502 B70-10616 02
Mechanically and thermally stable maser cavity resonator
HQ-10790 B72-10523 01
A method of eliminating hydrogen maser wall shift
HQ-10663 B72-10670 03
- LEVINE, N.**
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09
- LEVINE, S. H.**
Device for measuring electric fields
ARC-10164 B72-10148 03
- LEVINSON, S.**
Signal mixer for optical heterodyne receiver
M-FS-23251 B75-10307 03
- LEVITT, B. K.**
Telecommunications systems design techniques handbook
NPO-13245 B74-10284 02
- LEVOE, C. E.**
Zipper-type electrical connectors
NPO-11639 B72-10159 01
- LEVY, G. S.**
Low-noise microwave polarimeter
NPO-11512 B73-10134 02
- LEVY, R.**
Node-recording method for stiffness matrix wavefront reduction in structural analysis
NPO-11620 B73-10296 09
Improved procedures for mass matrix-reductions in eigenvalue solutions
NPO-11619 B73-10384 09
- LEWANDOWSKI, G. M.**
Computerized methods for trafficability analysis
M-FS-21423 B71-10484 03
- LEWETT, R. P.**
Hydrogen-environment embrittlement of metals: A study
M-FS-22540 B73-10168 04
- LEWICKI, G. W.**
Aluminum nitride insulating films for MOSFET devices
NPO-11859 B72-10425 04
Thin-film ultraviolet detector and spectrometer
NPO-11432 B72-10701 03
- LEWIN, J.**
Digital decoder for phase-delay coded data
GSFC-10894 B71-10345 01
- LEWIS, D. R.**
Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G MSC-11653 B72-10721 09
- LEWIS, G. W.**
Subminiature transducers for measuring forces and deformation of heart muscle
NPO-13423 B75-10051 05
Catheter-tip force transducer for cardiovascular research
NPO-13643 B75-10211 05
- LEWIS, J. R.**
Portable electron beam weld chamber
MSC-17738 B72-10338 06
- LEWIS, W. H.**
Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
- LEWIS, W. J.**
Fabrication of large tungsten structures by chemical vapor deposition
LEWIS-11239 B71-10212 08
- LEYERLE, R. B.**
Self-sealing, easily purged quick-disconnect hose coupling
MSC-17009 B70-10699 07
- LEYSATH, W.**
Neutron radiographic viewing system
M-FS-22024 B72-10468 02
- LIBBY, W. F.**
Ohmic diode
HQ-10534 B70-10200 01
Temperature-independent resistor for microelectronic circuits
HQ-10382 B70-10276 01
Sintered diamond compacts using metallic cobalt binders
HQ-10706 B72-10519 04
- LIEBENSTEIN, R.**
Weld beveling of large-diameter pipes
KSC-10550 B71-10280 08
- LIEBERMAN, M.**
Silver-chlorine fuel cell: A concept
ARC-10491 B72-10221 03
- LIEBERMAN, S. L.**
Nonflammable potting-encapsulating and conformal coating compounds
JSC-14164 B73-10102 04
- LIEBERT, C. H.**
A method for measuring cooling air flow in base coolant passages of rotating turbine blades
LEWIS-12433 B75-10017 03
Ceramic thermal protective coating withstands hostile environment of rotating turbine blades
LEWIS-12554 B75-10290 04
- LIGHTSEY, G. R.**
Thermally stable polyimides from solutions of monomeric reactants
LEWIS-11325 B71-10442 04
- LIKINS, P. W.**
Hybrid coordinate formulation used for the design of attitude control systems for flexible spacecraft
NPO-11714 B73-10300 09
- LILEY, B.**
Cloud-free resolution element statistics program
GSFC-11494 B71-10463 09
- LIM, L. Y.**
High efficiency telemetry method
NPO-10388 B71-10371 02
- LIM, R. S.**
Rapid method for interconversion of binary and decimal numbers
ARC-10159 B70-10496 09
- LIN, H. C.**
Low power NAND gate
M-FS-14487 B70-10203 01
Silicon contact for area reduction of integrated circuits
M-FS-20688 B71-10368 01
A method for polycrystalline silicon delineation applicable to a double-diffused MOS transistor
LANGLEY-11536 B74-10234 01
- LINCOLN, K. A.**
Laser mass spectrometer
ARC-10687 B72-10571 03
- LINCOLN, S. J.**
A continued fraction generator for smooth pulse sequences
MSC-13697 B71-10304 01
- LINDBERG, R. A.**
High-temperature electric stator
LEWIS-10889 B70-10459 01
Brazing alloys for high temperature service
LEWIS-11374 B73-10205 06
Inhibiting Kirkendall void growth in welded bimetallic structures
LEWIS-11573 B75-10006 08
- LINDER, N. F.**
Neutron-activation analysis applied to copper ores and artifacts
ARG-10446 B70-10177 04
- LINDGREN, J. R.**
Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04
- LINDKVIST, E. C.**
Boron-epoxy tubular structure members
ARC-10737 B73-10265 08
- LINDQUIST, C. R.**
Rigid open-cell polyurethane foam for cryogenic insulation
LEWIS-11220 B71-10079 04
- LINDQUIST, G. H.**
Measurement of temperature profiles in hot gases and flames
LEWIS-12055 B74-10060 03
- LINDQUIST, J. J.**
Removal of flowmeter bearings from blind cavities
M-FS-18713 B70-10227 06
- LINDSEY, R. S., JR.**
Pulse stretcher for narrow pulses
JSC-14130 B73-10365 02
Programmable random interval generator
JSC-14131 B73-10367 02
- LINDSEY, W. C.**
Digital data transition tracking loop improves data reception
NPO-10844 B70-10009 02

- Block-coded communications
NPO-11397 B70-10242 02
A nonlinear-coherence receiver
NPO-11921 B73-10144 02
Data-aided carrier tracking loops
NPO-11282 B73-10356 01
- LINE, L. G.**
Discrete-component S-band power amplifier
GSFC-11248 B71-10365 01
- LINLOR, W. I.**
Remote measurement of the water content of snowpacks
ARC-10651 B72-10567 03
- LINNECKE, C.**
Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 B75-10170 05
- LIU, D. W.**
Evaluating foam heterogeneity
AEC-10046 B72-10365 04
- LIPANOVICH, M. I.**
Microminiaturized, biopotential conditioning system (MBCS)
JSC-14180 B73-10236 02
- LIPIN, R., JR.**
Improved antenna pattern recorder provides visual display of RF power
M-FS-20447 B70-10230 09
Automatic reference level control for an antenna pattern recording system
M-FS-20257 B71-10014 01
- LIPOMA, P.**
Vidicon storage tube electrical input/output
MSC-14053 B72-10285 02
- LIPOMA, P. C.**
Burst synchronization detection system
MSC-90317 B70-10159 02
Wein bridge oscillator circuit
MSC-13686 B71-10089 01
- LIPPINCOTT, S.**
Spectral analysis of oscillation instabilities in frequency standards
M-FS-20778 B70-10572 02
- LIPPMAN, M.**
Fabrication of carbon film composites for high-strength structures
ARC-10613 B72-10423 04
- LISTER, J. L.**
Improved thermally conducting electron transfer polymers
GSFC-11304 B72-10291 04
- LISTER, L. R.**
Oscillating tank circuit eliminates ballast resistor in lamp control circuit
M-FS-20891 B71-10275 01
- LISTON, E. M.**
Wide-range logarithmic radiometer for measuring high temperatures
ARC-10254 B71-10498 01
- LITCHFIELD, J. H.**
Improved apparatus for continuous culture of hydrogen-fixing bacteria
HQ-09000 B70-10001 05
- LITTLE, D. G.**
Technical management techniques for identification and control of industrial safety and pollution hazards
M-FS-21883 B72-10588 05
- LITTLEPAGE, R. S.**
Enhancing efficiency of single, large-aperture antennas
HQ-10597 B71-10287 01
- LITTMAN, J.**
Progress in research on chlorate candle technology
MSC-13409 B70-10258 04
- LIU, C. Y.**
Resonant systems for dynamic evaluation of pressure transducers
HQ-10609 B70-10692 07
- LIU, F. F.**
Technique for analyzing human respiratory process
MSC-13436 B70-10528 05
- LIU, T. S.**
Manganese bismuth thin film for large capacity digital memories
M-FS-21246 B72-10107 03
- LIU, Y. Y.**
Wideband wattmeter for instant measurement of real power
LEWIS-11698 B72-10737 01
- LIVINGOOD, J. N. B.**
Flow characteristics of an air jet impinging on a flat surface
LEWIS-11129 B70-10670 03
- LOBB, V. B.**
Automatic, computerized testing of bolts
NPO-11090 B70-10657 06
- LOBELL, G. M.**
High-field superconducting nested coil magnet
ARG-10060 B70-10061 03
Stranded superconducting cable of improved design
ARG-90108 B70-10070 01
- LOCH, F. J.**
Electronic device increases threshold sensitivity and removes noise from FM communications receiver
MSC-12165 B71-10091 02
- LOCKE, E.**
Industrial laser welding: An evaluation
M-FS-23237 B75-10267 08
- LOCKERSON, D. C.**
Alphanumeric character generator for oscilloscope
GSFC-11582 B73-10370 02
- LOCKHART, J. M.**
Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
- LOEHNER, J. L.**
Novel dielectric reduces corona breakdown in ac capacitors
M-FS-21486 B72-10505 01
- LOGGINS, R.**
Folding tools for flat conductor cable harnesses
M-FS-20121 B71-10415 08
Handling fixture for soldering round wires to FCC
M-FS-20118 B71-10464 08
- LOH, G. M.**
Microminiaturized, biopotential conditioning system (MBCS)
JSC-14180 B73-10236 02
- LOHWATER, R. K.**
Improved method for reclaiming vacuum diffusion pump oil
LEWIS-11647 B72-10511 04
- LOIACONO, G. M.**
A new optical recording medium
M-FS-22348 B73-10095 03
- LOKERSON, D. C.**
Techniques for decoding speech phonemes and sounds: A concept
GSFC-11898 B75-10086 02
- LOLLAR, R. B.**
Remote sunfall monitor: A concept
M-FS-22943 B74-10149 03
- LONBORG, J. O.**
Jettisoning system for a parachute's canister
NPO-11236 B70-10398 06
- LONG, H.**
New meter probes provide protection from high current power sources at potentials up to 600 volts
LANGLEY-10804 B72-10455 01
- LONG, L. E.**
Post-operative cranial pressure monitoring system
ERC-10336 B70-10436 05
- LONG, M. J.**
Reducing flow requirements of fluid actuators
LANGLEY-11540 B75-10258 06
- LONGTHORNE, J. E.**
Meter circuit for tuning RF amplifiers
NPO-11865 B73-10389 02
- LOOMIS, W. R.**
High-temperature, long-life polyimide seals for hydraulic actuator rods
LEWIS-11212 B71-10098 07
Resin additive improves performance of high-temperature hydrocarbon lubricants
LEWIS-11364 B71-10394 04
- LOOP, R. W.**
Absolute focus lock for microscopes
LANGLEY-10184 B70-10728 07
- LORD, H. C.**
Direct analysis of hydrogen/deuterium mixtures: A concept
NPO-11322 B72-10244 03
- LORENZO, C. F.**
Variable sweep-rate shortens dynamic testing time
LEWIS-11238 B71-10251 02
- LORY, C. B.**
Fill-in binary loop pulse-torque quantizer
M-FS-23100 B75-10037 02
- LOVALL, D. D.**
Measuring the electric field of a cloud
KSC-10731 B73-10074 02
- LOVE, A. W.**
Nondestructive measurement of capillary tube internal diameter
LANGLEY-11647 B75-10156 02
Simple temperature sensor with direct readout
LANGLEY-11818 B75-10260 01
- LOVE, W. L.**
Separation of gas mixtures by centrifugation
ARC-10449 B72-10270 03
- LOVELADY, R. W.**
Miniature sonar fish tag
LANGLEY-11814 B75-10092 02
- LOVELL, R. R.**
Very high voltage latching relay
LEWIS-12265 B74-10079 01
- LOVIN, J. K.**
Radiation view factor program
M-FS-21075 B71-10106 09
- LOWE, D.**
Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
- LOWELL, C. E.**
Addition of silicon improves oxidation resistance of nickel based superalloys
LEWIS-12138 B74-10007 04

LOWERY, J. R.

Electroplating on titanium alloy
M-FS-21251 B71-10338 08
Selective coating for collecting solar
energy on aluminum
M-FS-22562 B73-10527 04

LU, P.

A process yields large quantities of pure
ribosome subunits
HQ-10662 B72-10653 05

LUBKOWITZ, A. W.

Radiation view factor program
M-FS-21075 B71-10106 09

LUBOWITZ, H. R.

Polyimide polymers provide improved
ablative materials
LEWIS-10861 B70-10300 04

Polyimide polymers provide higher char
yield for graphitic structures
LEWIS-10860 B70-10330 04

Soluble high molecular weight polyimide
resins
LEWIS-11056 B70-10504 04

LUCAS, C. H.

Highly stable analog-to-digital converter
NPO-13385 B75-10277 01

LUCAS, R. M.

Rugged, low-conductance, heat-flow
probe
MSC-13443 B70-10622 03

LUCE, R. S.

A new dry biomedical electrode
JSC-14321 B73-10146 02
Microminiaturized, biopotential
conditioning system (MBCS)
JSC-14180 B73-10236 02

LUCHT, R. A.

Wavelength-selective, sequential
Q-switching laser cavity
LANGLEY-11045 B74-10134 03

LUDWIG, A. C.

High-gain antenna with singly-curved
reflector
NPO-11361 B73-10291 02

Low-loss, circularly-polarized dichroic
plate
NPO-13171 B74-10283 01

LUDWIG, L. P.

High speed, self-acting, face-contact
shaft seal has low leakage and very low
wear
LEWIS-11598 B72-10114 07

High-speed, self-acting shaft seal
(circumferential type)
LEWIS-11274 B72-10447 07

Computer program for calculating the
temperature field of face seals
LEWIS-11110 B72-10483 09

Improved circumferential shaft seal
LEWIS-11873 B74-10062 07

LUMANICK, S.

Compact electric heater
LEWIS-11172 B70-10677 03

LUMB, D. R.

An improved telemetry system
ARC-10336 B71-10201 01

LUNDE, A. R.

Uniform high irradiance source
LEWIS-12360 B75-10008 03

LUNDEREN, P. R.

Acceleration of the aging process by
oxygen
ARC-10928 B75-10030 05

LUNDIN, C. E.

Use of thermodynamic properties of
metal-gas systems as low-pressure
standards
LANGLEY-10452 B70-10223 03

LUNDY, C. C.

Means for mapping radiated fields and
for measuring differential movement of
antenna elements
NPO-13053 B73-10452 02

Probes for measuring noise current in
an electronic cable
NPO-13123 B73-10454 02

LUSBY, T. K., JR.

System for measuring passenger reaction
to transportation-vehicle vibration
LANGLEY-11353 B73-10436 05
Nondestructive leak testing
LANGLEY-11561 B73-10464 06

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NPO-13215 B75-10048 03
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 concept
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 ARC-10528 872-10027 04
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 NPO-13131 875-10112 03
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 NPO-13650 875-10212 08
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 M-FS-20554 870-10681 03
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 ARC-10384 872-10160 03
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 M-FS-22918 873-10481 04
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 NPO-11819 873-10386 01
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 NPO-11546 871-10132 01
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 M-FS-16249 870-10144 07
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M-FS-20791 B70-10647 06
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M-FS-20726 B70-10291 07
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LEWIS-12331 B74-10126 08
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M-FS-20692 B72-10348 07
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NPO-10808 B71-10449 07
Squib-operated disconnect
NPO-11330 B72-10713 06
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ARC-10952 B75-10142 03
- MC GEE, J. V.**
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NPO-11586 B73-10020 04
- MCGREW, J. L.**
Opacified fibrous thermal insulation
LEWIS-11235 B71-10406 03
Internal capillary insulation for cryogenic tanks
LEWIS-11234 B72-10626 06
- MCHATTON, A. D.**
Amplifying ribbon extensometer
LANGLEY-11825 B75-10300 06
- MCHENRY, R. J.**
Process for synthesizing and formulating condensed ring polymers
LANGLEY-10423 B72-10473 04
- MCILWAIN, C. E.**
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HQ-10791 B74-10200 03
- MCKEE, H. B.**
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M-FS-21597 B72-10408 06
Compound heat pipe operates over broad temperature range
M-FS-23329 B75-10313 06
- MCKEE, W. D., JR.**
Guidelines for fabrication of hybrid microcircuits
M-FS-21964 B72-10393 01
- MCKENNA, J. F.**
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NPO-11570 B73-10136 01
- MCKENNA, J. F., JR.**
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JSC-12531 B73-10218 09
- MCKENNA, P. J.**
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LEWIS-12223 B74-10019 03
- MCKENNA, R. T.**
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GSFC-11925 B75-10153 02
- MCKENZIE, R. L.**
Diatomic infrared gasdynamic laser permits selection of wavelengths
ARC-10370 B72-10206 03
- MCKEOWN, D.**
Thermoelectrically-cooled quartz microbalance
M-FS-23101 B75-10076 04
- MCKEVITT, J. F., III**
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HN-10728 B73-10479 02
- MCKISSON, R. L.**
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LEWIS-11374 B73-10205 06
- MCLACHLAN, A. B.**
Low-cost clearance indicator for high speed turbomachinery
LEWIS-12128 B73-10411 02
- MCCLYMAN, W. T.**
Improved circuit avoids premature power transistor failure
NPO-11365 B71-10370 02
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NPO-11726 B73-10142 04
Flat-band assembly for toroidal transformer cores
NPO-11966 B73-10391 08
Design parameters for toroidal and bobbin magnetics
NPO-13441 B73-10459 01
Versatile, analog-to-digital, power-regulator controller
NPO-13178 B73-10467 02
- MCMAHON, W.**
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MSC-17361 B71-10496 07
Quick release acoustic sensor holding fixture
MSC-17457 B72-10076 02
A tool for cutting ultra thin slits in metals
KSC-10770 B72-10433 07
- MCNALLY, P. F.**
Modified bubble level senses pitch and roll angles over wide range
MSC-13506 B71-10085 03
- MCNALLY, W. D.**
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LEWIS-11382 B71-10153 09
Computer program /TURBLE/ for calculating velocities and streamlines in turbomachines
LEWIS-10788 B71-10392 09
Program for calculating laminar and turbulent boundary layers in arbitrary pressure gradients
LEWIS-11097 B72-10111 09
FORTRAN program for computing coordinates of circular-arc, single and tandem, turbine and compressor, blade sections on a plane
LEWIS-11237 B72-10405 09
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LEWIS-11863 B72-10753 09
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LEWIS-12129 B74-10130 09
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M-FS-19234 B74-10265 04
- MCNAMEE, L. P.**
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M-FS-21537 B72-10142 09
- MCNEAR, M. F.**
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LANGLEY-11144 B73-10056 04
- MCPHERSON, J. I.**
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M-FS-22540 B73-10168 04
- MCWHORTER, F. L.**
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MSC-14865 B75-10318 09
- MCWHORTER, L. B.**
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JSC-14497 B73-10444 09
- MCWILLIAMS, I. G.**
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HQ-10683 B72-10327 03
- MEACHAM, R. H.**
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XAC-10048 B72-10037 06
- MEAD, G. D.**
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GSFC-11597 B72-10674 09
- MEADOWS, A. L.**
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KSC-10668 B72-10578 01
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Improved high voltage insulator for use in vacuum
LEWIS-11401 B72-10181 01

- MEDWID, D. W.**
Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06
- MEE, C., III**
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HQ-10426 B70-10556 09
- MEERS, B. Z., JR.**
Digital notch filter
KSC-10182 B73-10112 02
- MEHMED, O.**
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LEWIS-11690 B74-10001 06
- MEINER, J.**
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JSC-14222 B73-10261 02
- MEISSNER, C. W., JR.**
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LANGLEY-11833 B75-10227 03
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HQ-10547 B70-10082 01
- MELAMED, L.**
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LEWIS-11466 B72-10183 06
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HQ-10230 B70-10024 01
- MELLOR, G. L.**
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LEWIS-11190 B71-10155 09
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M-FS-23260 B75-10165 06
- MELUGIN, J. F.**
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JSC-14219 B73-10173 02
- MENARD, W. A.**
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NPO-11068 B70-10133 09
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NPO-11885 B72-10242 03
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LEWIS-11380 B72-10491 04
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ARC-10615 B72-10064 09
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ARC-10833 B74-10113 09
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ARC-10882 B74-10221 09
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LRL-10025 B72-10475 07
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NPO-11563 B72-10315 01
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NPO-11743 B74-10194 03
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LANGLEY-11112 B74-10260 01
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GSFC-11694 B74-10181 03
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NPO-13231 B75-10275 02
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NPO-13419 B75-10120 01
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GSFC-11393 B71-10456 09
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ARC-10748 B73-10503 04
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NPO-13348 B75-10123 03
- MERKLE, C. L.**
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LANGLEY-11535 B74-10206 09
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LEWIS-12237 B74-10085 04
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JSC-14375 B73-10121 04
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GSFC-11545 B72-10619 09
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LANGLEY-10681 B72-10328 04
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KSC-10111 B70-10119 01
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NPO-12026 B71-10293 08
- METGER, G. W.**
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LEWIS-11297 B71-10393 04
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NPO-11709 B71-10401 09
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HQ-10745 B72-10755 01
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M-FS-22686 B73-10395 06
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M-FS-22724 B73-10422 03
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M-FS-14333 B70-10626 06
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LANGLEY-10679 B70-10619 05
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LEWIS-12009 B73-10171 01
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HQ-10253 B70-10169 02
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M-FS-21927 B72-10615 06
- MIDLER, J. A., JR.**
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NPO-10893 B70-10334 04
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M-FS-21775 B73-10105 03
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LEWIS-11807 B73-10072 08
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M-FS-14510 B70-10257 09
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LEWIS-11808 B72-10582 09
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M-FS-20576 B70-10285 04
- MILLARD, J. P.**
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ARC-10648 B72-10566 04
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ARC-10649 B73-10268 03
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MSC-12677 B75-10105 03
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M-FS-14170 B70-10089 07

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MSC-14123 B72-10461 05

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NPO-13112 B74-10108 03

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NPO-13459 B75-10181 03

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NPO-13579 B75-10209 06

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M-FS-14133 B72-10730 05

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M-FS-21637 B72-10143 03

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M-FS-22426 B73-10199 01

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M-FS-23268 B75-10268 03

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LEWIS-11920 B74-10127 09

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M-FS-20272 B70-10316 04

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LEWIS-12365 B75-10003 06

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LEWIS-11751 B72-10632 05

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LEWIS-11704 B73-10010 02

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LEWIS-12020 B73-10249 01

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LEWIS-12388 B75-10186 09

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HQ-10741 B72-10522 05

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KSC-10557 B71-10380 01

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GSC-11237 B71-10324 02

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ARC-10474 B72-10162 06

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M-FS-18696 B70-10259 04

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M-FS-18754 B70-10667 03

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LRL-10031 B72-10314 03

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M-FS-21326 B72-10109 02

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NPO-11637 B73-10035 01

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ARC-10823 B75-10056 04

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MSC-14151 B72-10690 05

MILLS, S. M.

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LANGLEY-10712 B71-10505 08

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LANGLEY-11069 B72-10395 05

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LANGLEY-11074 B72-10637 05

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LANGLEY-11354 B73-10229 05

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LANGLEY-11326 B73-10241 05

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LANGLEY-11649 B74-10188 05

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MSC-15887 B71-10096 05

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MSC-17694 B72-10335 09

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NPO-11551 B71-10244 09

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LEWIS-11828 B74-10003 04

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LEWIS-12138 B74-10007 04

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LEWIS-11535 B72-10331 06

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LEWIS-11851 B72-10631 06

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LEWIS-11814 B72-10686 06

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M-FS-23047 B74-10237 07

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MSC-19442 B74-10224 03

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ARC-10928 B75-10030 05

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LANGLEY-11523 B73-10463 07

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LEWIS-11552 B72-10506 01

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LEWIS-10936 B70-10210 04

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LANGLEY-11203 B74-10029 05

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M-FS-15162 B71-10513 06

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ARC-10829 B74-10054 03

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M-FS-16298 B70-10220 02

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JSC-14083 B73-10339 04

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ARC-10763 B73-10506 02

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LANGLEY-11282 B73-10160 01

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MSC-13234 B70-10438 03

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M-FS-20848 B72-10342 04

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GSFC-12079 B75-10295 09
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M-FS-20849 B71-10226 02
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M-FS-22279 B73-10116 03
- MOLES, W. H.**
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GSFC-10901 B72-10647 02
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LEWIS-11261 B71-10261 04
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MSC-13855 B71-10318 02
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JSC-14082 B73-10083 09
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JSC-13912 B73-10226 02
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HQ-10545 B70-10147 02
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LEWIS-12285 B75-10019 09
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LANGLEY-11434 B73-10357 04
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M-FS-21742 B72-10354 03
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M-FS-24073 B71-10473 09
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LANGLEY-11258 B73-10042 06
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NPO-11131 B70-10524 01
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LEWIS-12507 B75-10286 03
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LEWIS-11026 B70-10331 08
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LEWIS-11387 B71-10455 08
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LEWIS-11388 B71-10520 08
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LEWIS-11514 B72-10288 08
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LEWIS-12075 B73-10315 04
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M-FS-20830 B70-10595 07
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KSC-10702 B72-10295 02
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M-FS-23133 B74-10294 01
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LEWIS-90264 B70-10610 07
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HQ-10766 B72-10657 05
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HQ-10777 B72-10659 05
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HQ-10779 B72-10661 05
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KSC-10108 B73-10191 02
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LEWIS-11893 B73-10027 03
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ARC-10512 B74-10045 06
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M-FS-20848 B72-10342 04
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LEWIS-11260 B71-10268 08
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M-FS-15180 B70-10594 08
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LEWIS-12184 B74-10125 08
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ARC-10854 B74-10174 06
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M-FS-21788 B72-10576 06
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M-FS-21991 B72-10624 09
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M-FS-20663 B70-10050 07
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MSC-13530 B71-10149 04
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M-FS-22741 B73-10417 03
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NPO-11139 B72-10711 04
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NPO-11444 B70-10718 02
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MSC-13222 B70-10031 03
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M-FS-24402 B73-10212 03
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M-FS-24424 B73-10325 06
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M-FS-20915 B72-10106 01
- MOSS, R. W.**
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NPO-11475 B71-10282 02
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LEWIS-12331 B74-10126 08
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LANGLEY-10779 B70-10629 01
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LEWIS-12502 B75-10138 03
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LEWIS-12503 B75-10139 03
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LEWIS-11082 B70-10322 07
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NPO-13623 B75-10183 03
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LEWIS-11109 B70-10569 01
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LEWIS-11228 B71-10179 01

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NPO-13620 B75-10336 04
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MSC-19549 B75-10321 04
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LEWIS-11017 B70-10080 04
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GSFC-11237 B71-10324 02
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GSFC-11902 B75-10249 07
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HQ-10548 B70-10157 01
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LANGLEY-11341 B73-10336 03
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LANGLEY-11382 B73-10359 05
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HQ-10112 B70-10222 04
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ARC-10763 B73-10506 02
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ARC-10214 B71-10164 02
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ARC-10210 B71-10453 09
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ARC-10466 B74-10170 02
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NPO-11288 B70-10612 04
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NPO-12028 B72-10551 04
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NPO-12029 B72-10552 06
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NPO-13105 B74-10166 03
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MSC-15712 B71-10069 01
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ARC-10533 B72-10302 03
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- MURRAY, D. O.**
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M-FS-20324 B71-10019 02
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KSC-10519 B71-10018 07
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KSC-10518 B71-10364 03
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LEWIS-11859 B73-10246 09
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Versatile electronic load
NPO-13202 B73-10458 03
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KSC-10618 B72-10636 06
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An equation of state for oxygen and nitrogen
JSC-14465 B73-10394 04
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M-FS-23062 B74-10292 07
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LEWIS-11094 B70-10352 06
- N**
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Volume-reflecting dielectric heat shield
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LRL-10033 B72-10343 04
- NAGANO, S.**
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Improved silver-zinc battery-terminal seals
LEWIS-11615 B72-10581 06
- NAHAS, J. J.**
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HQ-10783 B72-10518 01
- NAIDITCH, S.**
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NPO-10440 B70-10676 04
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LEWIS-10814 B71-10388 03
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NPO-11542 B71-10157 03
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NPO-11861 B74-10102 03
- NANIS, L.**
Foaming-electrolyte fuel cell
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LANGLEY-11383 B73-10419 06
- NEAL, B. H.**
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LEWIS-11705 B72-10489 06
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A concept for universal pliers
KSC-10768 B72-10685 07
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NPO-11709 B71-10401 09
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LANGLEY-10789 B74-10289 05
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ARC-10919 B74-10222 04
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ARC-10737 B73-10265 08
- NELSON, R. L.**
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M-FS-19004 B72-10407 06
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HQ-10271 B70-10094 04

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Sensitive gaseous hydrogen detection system
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M-FS-20272 870-10316 04
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LEWIS-11610 873-10206 03
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Radiant heating concept efficient for light-transmitting windows
M-FS-20630 870-10324 03
- NEUMANN, F. D.**
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ARC-10786 875-10055 06
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M-FS-14797 870-10107 05
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M-FS-21692 873-10050 03
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- NEVIN, R. S., SR.**
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ARC-10940 875-10146 09
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M-FS-21616 873-10331 02
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M-FS-23242 875-10306 01
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NPO-10863 870-10131 04
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KSC-10573 870-10560 01
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HQ-10306 872-10458 09
- NICHOLLS, J. A.**
Controlled droplet spray generator
LEWIS-11193 870-10652 07
- NICHOLS, C. D.**
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LANGLEY-11138 872-10533 05
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LEWIS-11045 870-10351 01
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LEWIS-90361 870-10646 03
Rigid open-cell polyurethane foam for cryogenic insulation
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LEWIS-12412 875-10016 04
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NPO-11494 872-10724 02
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Automatic PCM guard-band selector and calibrator
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LEWIS-11001 871-10407 06
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ARC-10776 873-10490 03
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M-FS-22088 873-10525 02
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MSC-13476 871-10066 03
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M-FS-20823 870-10654 08
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LEWIS-10286 870-10312 07
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NPO-11012 870-10523 07
Bolt installation tool for tightening large nuts and bolts
NPO-13059 874-10164 07
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ARC-10658 872-10349 08
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M-FS-20237 871-10420 08
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M-FS-20113 871-10458 08
Cable insulation cut-through tester
M-FS-20114 871-10459 08
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MSC-14649 874-10191 02
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Design and development of a fast scan infrared detection and measurement instrument
M-FS-20749 871-10022 03
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Design of a unit to produce hot distilled water for the same power consumption as a water heater
JSC-14224 873-10402 04
- NUNEZ, S.**
Improved welding of Rene-41
M-FS-18821 870-10367 08
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Dynamics of short pressure probes
LEWIS-11293 871-10374 09

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LEWIS-11529 B72-10577 09
- OBLER, H. D.**
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JSC-14143 B73-10429 06
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M-FS-21386 B71-10424 09
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LEWIS-10954 B70-10002 02
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M-FS-22401 B74-10225 09
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NPO-13140 B75-10046 02
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LANGLEY-11309 B73-10076 06
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LEWIS-11438 B73-10012 09
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M-FS-22118 B72-10646 01
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LEWIS-11920 B74-10127 09
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ARC-10870 B75-10059 02
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M-FS-18754 B70-10667 03
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ARC-10456 B72-10213 06
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LANGLEY-11056 B73-10424 04
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LANGLEY-11661 B75-10089 08
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NPO-11661 B73-10299 02
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ARC-10602 B72-10307 03
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M-FS-22563 B73-10156 05
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M-FS-21618 B72-10466 06
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KSC-10833 874-10183 05
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- P**
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M-FS-22873 874-10189 09
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High-intensity source of extreme ultraviolet
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LEWIS-12085 874-10020 07
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LANGLEY-11433 873-10414 06
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LANGLEY-11612 B74-10094 03

PATE, W.

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LEWIS-11220 B71-10079 04

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M-FS-18561 B70-10173 03

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NPO-11104 B70-10590 02
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correction codes
NPO-11487 B71-10408 02

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NPO-11486 B71-10451 02

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NPO-10351 B72-10226 01

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complexes
NPO-11491 B73-10165 09

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pseudonoise generator and detector
NPO-11406 B73-10292 01

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NPO-13451 B75-10278 09

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LEWIS-90237 B70-10321 03

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M-FS-21415 B71-10466 05

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LEWIS-11941 B73-10195 02

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M-FS-20005 B71-10059 05

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GSFC-11895 B75-10248 03
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LANGLEY-11112 B74-10260 01
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M-FS-23163 B75-10097 03
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JSC-14180 B73-10236 02
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KSC-10304 B72-10540 06
- PETERSON, N. C.**
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HQ-10752 B72-10524 03
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NUC-10231 B71-10040 01
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NUC-10352 B71-10045 08
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LEWIS-10387 B70-10579 01
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LEWIS-11282 B71-10136 01
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LEWIS-11600 B74-10083 02
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LEWIS-10933 B70-10183 04
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LEWIS-11802 B73-10003 08
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NPO-11480 B70-10683 03
- PEYTON, B.**
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GSFC-11455 B73-10223 02
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M-FS-18589 B70-10176 07
- PHELPS, W. R.**
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LANGLEY-10607 B70-10249 01
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LEWIS-11046 B70-10588 04
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LEWIS-11639 B72-10439 04
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LEWIS-10965 B72-10456 04
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M-FS-22054 B73-10090 04
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NPO-11477 B70-10674 04
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KSC-10644 B73-10280 02
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GSFC-11169 B71-10055 04
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GSFC-11737 B73-10253 04
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NPO-13149 B73-10455 06
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M-FS-15066 B71-10181 09
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M-FS-20587 B71-10366 02
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M-FS-15218 B72-10498 07
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MSC-13700 B72-10216 07
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LANGLEY-11415 B73-10522 04
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LANGLEY-11661 B75-10089 08
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- PITTS, F. L.**
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LANGLEY-10756 B70-10716 02
- PITTS, W. C.**
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M-FS-22322 B73-10526 09
- PLUMER, J. A.**
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LEWIS-12109 B75-10068 02
- PLUMMER, A. M.**
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- POESCH, J. G.**
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JSC-14375 B73-10121 04

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LEWIS-12433 B75-10017 03
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LEWIS-11162 B71-10264 03
- PONTIOUS, H. L.**
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M-FS-24010 B72-10401 04
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M-FS-24221 B72-10679 06
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M-FS-21964 B72-10393 01
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LANGLEY-11809 B75-10226 03
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- PORT, W. S.**
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M-FS-21387 B71-10488 04
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LANGLEY-10976 B74-10133 04
- PORTER, R. N.**
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NPO-10808 B71-10449 07
- PORTER, R. W.**
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NPO-11776 B73-10385 04
- PORTNOY, W. M.**
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JSC-14339 B73-10220 05
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MSC-12710 B75-10269 05
- POSCH, R. E.**
Device measures conductivity and velocity of ionized gas streams
XAC-05695 B71-10235 03
- POSEY, D. L.**
Multihead measuring tape
LANGLEY-11266 B73-10193 07
- POSHCHENRIEDER, W. P.**
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LANGLEY-10180 B70-10402 04
- POSNER, E. C.**
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NPO-11302 B73-10342 02
- POSTA, S. J.**
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LEWIS-12009 B73-10171 01
- POSTAL, R. B.**
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NPO-11132 B71-10307 02
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NPO-11503 B72-10093 06
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NPO-11730 B73-10036 04
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NPO-11731 B73-10037 04
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LEWIS-11722 B72-10739 09
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LEWIS-11283 B72-10537 07
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LEWIS-12094 B74-10017 04
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M-FS-14170 B70-10089 07
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ARC-10529 B72-10215 04
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M-FS-21424 B71-10519 03
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LANGLEY-10626 B70-10656 03

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JSC-14558 B73-10511 02

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MSC-14557 B74-10025 02

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LANGLEY-10151 B73-10238 04

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LEWIS-11903 B73-10011 02

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LEWIS-11995 B73-10230 06

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GSFC-11910 B75-10032 09

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ARG-90108 B70-10070 01

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LEWIS-12509 B75-10147 03

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XAC-10048 B72-10037 06
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NPO-11437 B73-10293 02

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KSC-10562 B70-10488 01
Connector locking device

KSC-10537 B70-10553 01
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M-FS-20971 B71-10350 03

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HQ-09954 B70-10020 03

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MSC-11773 B70-10190 01

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MSC-12393 B71-10167 05

Highly-visible air-sea rescue marker
MSC-12564 B75-10166 05

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NPO-11368 B72-10042 01

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LEWIS-11349 B71-10321 09

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LANGLEY-10927 B73-10048 05

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M-FS-22264 B72-10696 01

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of component dimensions for maximum
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M-FS-21924 B72-10316 01

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M-FS-22590 B73-10330 03

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LANGLEY-11152 B74-10202 03

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ARC-10349 B71-10114 01

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LANGLEY-10511 B72-10548 02

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Quick, easy to prepare freeze-dried
soups
MSC-14003 B72-10017 05

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Fixture for plating stripped conductors
of flat conductor cables /FCC/
M-FS-20122 B70-10719 08

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Cylindrically shaped rope ladder
M-FS-16319 B72-10688 07

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a field survey instrument
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convergent-divergent nozzle
NPO-10895 B70-10132 09

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M-FS-20613 B71-10031 03

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MSC-13746 B71-10263 02

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M-FS-14778 B71-10428 01

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M-FS-20698 B70-10513 08

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M-FS-21236 B71-10124 05

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a beat-to-beat basis
M-FS-20284 B73-10477 05

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LEWIS-12587 B75-10289 01

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JSC-17166 B73-10150 06

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pipe flushing
MSC-12548 B72-10496 06

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M-FS-20564 B71-10270 06

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M-FS-21675 B72-10352 07

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NPO-13157 B74-10281 01

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LANGLEY-10932 B72-10153 09
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LANGLEY-11197 B73-10362 09
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ARC-10410 B72-10161 04
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GSFC-11620 B73-10192 03

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GSFC-11061 B72-10719 01
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GSFC-11367 B73-10519 01
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ARC-10137 B72-10047 01
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GSFC-11302 B73-10332 06
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M-FS-20600 B71-10238 09
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NPO-11800 B71-10532 09
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M-FS-21720 B72-10639 02
- SCHENBERG, N. R.**
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JSC-14264 B73-10449 02
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MSC-17457 B72-10076 02
- SCHERMERHORN, R. S.**
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MSC-12419 B71-10301 07
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LEWIS-12140 B74-10009 07
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GSFC-10525 B72-10471 02
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NPO-12049 B71-10446 06
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HQ-10712 B72-10534 08
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ERC-10094 B70-10381 03
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M-FS-22728 B74-10044 09
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NPO-11708 B72-10694 02
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LEWIS-11529 B72-10577 09
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HQ-10179 B70-10254 05
- SCHMIDT, G. C.**
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MSC-14810 B75-10171 01
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M-FS-23327 B75-10312 01
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MSC-13858 B71-10306 09
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NPO-12128 B74-10275 03
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M-FS-24325 B74-10151 06
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NPO-11311 B70-10354 03
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NPO-11341 B72-10080 01
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NPO-13051 B73-10460 02
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NPO-13128 B74-10195 03
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LANGLEY-10292 B70-10711 03
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NPO-11627 B72-10155 01
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ERC-10365 B74-10252 06
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LANGLEY-11353 B73-10436 05
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ARC-10244 B72-10246 03
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M-FS-18844 B70-10645 04
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LEWIS-11076 B70-10343 07
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M-FS-20714 B70-10127 08
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NPO-13327 B75-10202 03
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KSC-10721 B73-10483 04
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XGS-06306 B70-10327 04
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GSFC-10361 B70-10600 04
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GSFC-11786 B73-10469 04
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M-FS-20564 B71-10270 06
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ARC-10410 B72-10161 04
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HQ-10745 B72-10755 01
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M-FS-15069 B70-10487 02
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GSFC-11087 B72-10751 02
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KSC-10108 B73-10191 02
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M-FS-18754 B70-10667 03
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M-FS-21361 B72-10597 07
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M-FS-16927 B71-10237 07
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MSC-90317 B70-10159 02
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ARC-10456 B72-10213 06
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LEWIS-11083 B70-10323 01
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XAC-2981 B71-10200 05
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GSFC-11358 B72-10280 04
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LEWIS-11395 B73-10040 08
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M-FS-21410 B72-10318 04
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M-FS-13466 B70-10088 07
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M-FS-21396 B73-10328 04
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LEWIS-11325 B71-10442 04
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M-FS-22672 B73-10432 09
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HQ-10683 B72-10327 03
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M-FS-21414 B72-10601 09
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M-FS-21138 B71-10207 07
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ARC-10737 B73-10265 08

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LEWIS-12598 B75-10283 01
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M-FS-20536 B71-10186 09
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GSFC-11279 B71-10267 09
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LEWIS-12267 B74-10064 01
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LANGLEY-11570 B74-10138 06
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ARG-10413 B71-10047 05
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LANGLEY-11528 B74-10262 01
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ARC-10653 B72-10310 03
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NUC-10157 B70-10534 01
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LEWIS-11047 B72-10038 04
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MSC-15803 B70-10679 07
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MSC-12305 B71-10137 05
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MSC-13408 B70-10087 07
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HQ-10579 B71-10211 09
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LEWIS-12153 B74-10084 09
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M-FS-21169 B71-10078 04
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MSC-14331 B74-10157 04
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XAC-10770 B71-10120 03
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GSFC-11553 B74-10042 03
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NPO-13345 B75-10178 04
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NPO-11388 B72-10138 01
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NPO-13308 B73-10353 02
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NPO-13497 B75-10182 03
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ARC-10532 B72-10029 04
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XGS-03644 B73-10517 03
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NPO-11261 B70-10399 06
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NPO-11617 B71-10188 06
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NPO-11554 B72-10341 03
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ARC-10199 B71-10526 03
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ARC-10198 B72-10188 03
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MSC-13437 B70-10165 07
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JSC-12593 B73-10318 02
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NPO-12011 B70-10702 01
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M-FS-22470 B73-10082 08
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GSFC-10275 B70-10247 01
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GSFC-11133 B71-10236 03
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ERC-10290 B70-10383 01
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NPO-13064 B74-10107 01
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MSC-17848 B72-10677 06
- SHUTE, D. I.**
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ARC-10753 B74-10197 01
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LEWIS-11708 B72-10726 09
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MSC-14331 B74-10157 04
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LEWIS-12587 B75-10289 01
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MSC-13512 B70-10465 07
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LEWIS-12269 B75-10022 06
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LEWIS-10933 B70-10183 04
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LEWIS-11802 B73-10003 08
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LEWIS-12394 B74-10248 04
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NPO-10663 B70-10625 09
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NPO-10778 B70-10292 03
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NPO-11846 B73-10347 06
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NPO-13168 B73-10457 04
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NPO-13170 B74-10297 07
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NPO-13423 B75-10051 05

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NPO-13643 B75-10211 05
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ARC-10024 B72-10557 05
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ARC-10734 B73-10264 01
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M-FS-14943 B70-10156 06
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NPO-11369 B73-10133 03
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LEWIS-12055 B74-10060 03
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M-FS-20819 B70-10391 07
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LEWIS-12511 B75-10189 03
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NPO-11921 B73-10144 02
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NPO-11282 B73-10356 01
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KSC-10654 B71-10391 02
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M-FS-21131 B71-10433 08
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M-FS-22563 B73-10156 05
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NPO-10730 B70-10171 07
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GSFC-11384 B71-10499 09
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XLA-05099 B73-10360 09
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MSC-13515 B71-10514 06
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ARC-10955 B75-10130 09
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GSFC-11221 B71-10221 01
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ARG-10243 B70-10045 01
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LANGLEY-11383 B73-10419 06
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LEWIS-10983 B70-10175 04
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LEWIS-12514 B75-10151 06
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Battery simulation program
NPO-11580 B71-10250 09
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LEWIS-11297 B71-10393 04
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NPO-11554 B72-10341 03
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ARC-10319 B72-10199 04
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ARC-10487 B72-10273 03
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LANGLEY-11030 B73-10119 02
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A simplified, compact static shift register
HQ-10723 B72-10591 02
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KSC-10508 B70-10071 03
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Hall effect transducer gives electrical output proportional to meter shaft rotation
LANGLEY-10620 B70-10298 01
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MSC-13906 B72-10006 05
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LANGLEY-10619 B70-10662 02
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ARC-10832 B74-10056 03
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LEWIS-12507 B75-10286 03
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ARC-10413 B72-10179 07
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M-FS-23026 B74-10150 02
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KSC-10723 B72-10541 02
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LANGLEY-10258 B71-10487 05
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XAC-01547 B72-10279 05
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NPO-11105 B70-10318 03
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LANGLEY-11197 873-10362 09
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LEWIS-11289 871-10262 03
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ARC-10792 874-10052 04
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GSFC-11188 873-10488 03
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NPO-11164 870-10209 03
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LEWIS-11615 872-10581 06
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M-FS-16863 872-10678 07
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LANGLEY-11543 873-10433 07
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M-FS-21393 871-10483 04
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M-FS-20962 871-10357 03
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M-FS-20941 872-10152 03
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LEWIS-12437 875-10014 01
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NPO-11612 873-10138 02
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GSFC-10566 872-10574 07
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M-FS-22848 B74-10076 06
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LANGLEY-10358 B71-10035 01
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MSC-15704 B71-10070 08
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LEWIS-12083 B75-10001 03
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M-FS-22565 B73-10155 03
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M-FS-22768 B73-10423 03
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NPO-13525 B75-10240 02
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NPO-10799 B70-10130 03
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NPO-13462 B75-10124 03
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KSC-10373 B70-10484 09
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NPO-11457 B72-10089 02
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M-FS-14952 B72-10448 02
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ERC-10237 B70-10378 01
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KSC-10750 B73-10189 02
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M-FS-14170 B70-10089 07
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GSFC-10981 B71-10409 06
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LEWIS-12152 B75-10018 09
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NPO-11892 B72-10072 09
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JSC-17662 B73-10254 04
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M-FS-24464 B73-10324 07
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GSFC-10855 B71-10110 03
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GSFC-10072 B71-10198 04
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M-FS-20541 B71-10205 02
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M-FS-21626 B72-10149 01
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M-FS-22493 B73-10055 01
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ARC-10450 B72-10452 01
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LEWIS-11111 B70-10552 01
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- TAGGART, R. B., JR.**
Low-cost quasi-parabolic antenna
LEWIS-11291 B71-10121 01
- TAGNELIA, C. R.**
Digital second-order phase-locked loop
NPO-11905 B74-10274 01
- TAHERZADEH, M.**
PPUAS--photopeak unfolding and self-shielding program
NPO-13188 B73-10087 09
- TAKAHASHI, T. H.**
Magnet-wire wrapping tool for integrated circuits
NPO-11815 B72-10426 07
- TALBOOM, F. P.**
Advanced protective coating for superalloys
LEWIS-11473 B72-10150 04
- TALBOT, T. D.**
Double precision trajectory program
/DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- TAMEKUNI, M.**
Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
LANGLEY-11199 B74-10203 09
Computer program for stresses and buckling of heated composite-stiffened panels and other structures (BUCLASP 3)
LANGLEY-11533 B74-10204 09
- TAMURA, T.**
Phosphorus in land-water systems
AEC-10049 B72-10429 05
- TANZILLI, R. A.**
Process for fabrication of stabilized aluminum phosphate fibers
LANGLEY-11526 B74-10185 08
- TAPIA, M. A.**
Generalized current distribution rule
LANGLEY-11565 B74-10093 02
- TARPLEY, J. L.**
Apparatus for measuring static coefficient of friction under compressive loads
GSFC-11893 B75-10214 06
- TASHJIAN, R. A.**
Low-cost, compact, cooled photomultiplier assembly for use in magnetic fields up to 1400 Gauss
LEWIS-12445 B75-10152 02
- TATGE, R. B.**
Prediction of faults in components of machinery in motion
GSFC-10801 B70-10116 06
Acoustical analysis system
GSFC-11087 B72-10751 02
- TAUSWORTHE, R. C.**
Third-order phase-locked loop receiver
NPO-11941 B74-10104 02
- TAYLOR, A. C.**
Technical management techniques for identification and control of industrial safety and pollution hazards
M-FS-21883 B72-10588 05

- TAYLOR, C. E.**
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ARC-10933 B75-10145 08
- TAYLOR, F. W.**
Program to determine radiating, nonadiabatic, inviscid flow over a blunt body by the method of integral relations
LANGLEY-11048 B72-10067 09
- TAYLOR, M. F.**
Solvation agent for disulfide precipitates from inhibited glycol-water solutions
MSC-13695 B71-10331 04
- TAYLOR, R. A.**
Cardiotachometer displays heart rate on a beat-to-beat basis
M-FS-20284 B73-10477 05
Closed-circuit television welding-electrode guidance system
M-FS-23026 B74-10150 02
- TAYLOR, T.**
Self-synchronizing, bi-orthogonal coded PCM telemetry system
GSFC-11237 B71-10324 02
- TAYLOR, W. E.**
Slot configuration for axial-flow turbomachinery blades
LEWIS-11572 B72-10484 07
- TAYNAL, J. D.**
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M-FS-20941 B72-10152 03
- TEDROW, P. M.**
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ERC-10305 B70-10491 03
- TEGNELIA, C. R.**
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NPO-11132 B71-10307 02
- TEITELBAUM, B. R.**
A piezoelectrically actuated ball valve
ARC-10338 B72-10204 06
- TELLIER, G. F.**
Poppet valve tester
LEWIS-11655 B73-10415 07
- TEMPS, A. J., JR.**
Multi-frequency resonant antenna
HQ-10215 B70-10098 02
- TENER, W. M.**
Dry-frictional shock absorber
NPO-11212 B70-10040 07
Overflow sensor for cryogenic-fluid vessels
NPO-10619 B72-10554 03
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Theory and application of Kalman filtering
M-FS-20491 B70-10309 06
- TENG, R. N.**
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JSC-13789 B73-10413 07
- TENOSO, H. J.**
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MSC-13906 B72-10006 05
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ARC-10570 B72-10420 04
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ARC-10572 B72-10422 04
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LEWIS-11208 B70-10628 03
- TERPAY, A.**
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LEWIS-11169 B73-10013 08
- TETZLAFF, J. E.**
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LEWIS-11046 B70-10588 04
- TEXLER, R. E.**
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LEWIS-12140 B74-10009 07
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ERC-10139 B70-10494 01
- THAYER, S. D.**
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M-FS-21119 B71-10111 03
- THIEL, R. A.**
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M-FS-23327 B75-10312 01
- THIRUVENGADAM, A.**
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HQ-10591 B71-10197 04
- THOM, E. H.**
DSIF station schedules
NPO-11547 B71-10243 09
- THOMAS, C. E.**
Rechargeable, silver-zinc battery conditioner/monitor unit and state-of-charge indicator
M-FS-22835 B73-10486 02
- THOMAS, D. F.**
An automated remote marshland water-sampling station
LANGLEY-11503 B73-10437 04
- THOMAS, D. F., JR.**
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LANGLEY-10102 B72-10641 05
- THOMAS, D. T.**
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M-FS-21627 B71-10492 09
- THOMAS, E. C.**
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HQ-10270 B70-10201 05
- THOMAS, G. M.**
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NPO-11852 B72-10556 03
- THOMAS, J. M.**
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M-FS-21970 B73-10115 09
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LEWIS-11072 B72-10515 04
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Accelerated battery-life testing - A concept
GSFC-11085 B71-10348 06
- THOMAS, R. L.**
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LEWIS-12509 B75-10147 03
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ARC-10857 B74-10245 05
- THOMPSON, G. A.**
Fail-safe numerical control
M-FS-12613 B70-10522 02
- THOMPSON, J. P.**
Low-frequency triangular wave generator
ARC-10259 B71-10469 01
- THOMPSON, L. G. D.**
Improved laboratory gradiometer can be a field survey instrument
MSC-13980 B72-10001 03
- THOMPSON, L. L.**
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GSFC-11200 B72-10472 03
- THOMPSON, L. R.**
Chrysler improved numerical differencing analyzer for third generation computers
CINDA-3G
MSC-11653 B72-10721 09
- THOMPSON, M. B.**
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M-FS-22326 B73-10062 04
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MSC-12363 B71-10494 03
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LEWIS-10928 B70-10537 08
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ARC-10563 B72-10560 04
- THORNTON, R. D.**
Power semiconductor device with negative thermal feedback
HQ-10577 B70-10262 01
- THURSTON, L. B., JR.**
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LANGLEY-11399 B73-10240 06
- TICK, P. A.**
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ERC-10149 B70-10495 01
- TJETJEN, J.**
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ERC-10301 B70-10473 03
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ERC-10303 B70-10474 01
P-n junctions formed in gallium antimonide
ERC-10302 B70-10500 01
- TILLERSON, J. R.**
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JSC-14496 B73-10443 09
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JSC-14494 B73-10446 09
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NPO-11572 B74-10209 01
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ARC-10173 B72-10048 03

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ERC-10239 B70-10497 04
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LEWIS-12110 B75-10015 09
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GSFC-11188 B73-10488 03
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KSC-10513 B72-10283 07
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NPO-11587 B73-10021 04
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LEWIS-11469 B72-10379 03
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ARC-10514 B72-10301 05
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M-FS-14259 B70-10283 07
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LANGLEY-11049 B72-10068 09
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ARC-10788 B74-10049 06
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LANGLEY-10184 B70-10728 07
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KSC-10326 B73-10281 02
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NPO-10535 B70-10187 03
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M-FS-20824 B70-10514 08
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NPO-13205 B74-10299 02
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ARC-10186 B71-10229 04
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LANGLEY-10387 B70-10023 02
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NPO-11776 B73-10385 04
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NPO-13118 B74-10277 02
- TOWER, L. K.**
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LEWIS-11509 B73-10002 04
- TOWNES, C. H.**
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HQ-10541 B72-10389 03
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LEWIS-11075 B70-10347 07
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LEWIS-11483 B72-10136 04
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NPO-10863 B70-10131 04
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NPO-10862 B70-10453 04
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NPO-12061 B71-10154 04
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M-FS-22672 B73-10432 09
- TRAUTWEIN, W.**
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M-FS-22691 B73-10326 06
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LEWIS-90265 B70-10721 01
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NPO-12076 B71-10028 08
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ERC-10233 B70-10447 05
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ERC-10266 B70-10460 01
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GSFC-11620 B73-10192 03
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LEWIS-11910 B74-10128 09
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M-FS-21328 B73-10071 04
- TSUDA, G. I.**
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GSFC-11909 B74-10288 02
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/TCBSYS/
GSFC-11306 B71-10314 09
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M-FS-20112 B71-10457 08
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MSC-13433 B70-10037 07
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M-FS-22054 B73-10090 04
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metal structures
LEWIS-11259 B72-10754 08
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LANGLEY-10658 B71-10002 09
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GSFC-10566 B72-10574 07
- TUREK, R. F.**
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ERC-10404 B70-10461 03
- TURNER, J. W.**
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and recording system
M-FS-20658 B72-10442 02
- TURNER, R. E.**
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/maxometer/
M-FS-20916 B71-10023 07

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LANGLEY-10885 B71-10337 06

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GSFC-12039 B75-10253 05

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NPO-11444 B70-10718 02

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M-FS-16709 B71-10193 01

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M-FS-16609 B71-10213 02

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M-FS-23140 B75-10095 06

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M-FS-21556 B72-10325 07

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ARC-10756 B73-10496 06

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MSC-15565 B70-10217 01

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LEWIS-11693 B72-10634 09

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NPO-11567 B72-10101 02

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M-FS-22044 B72-10697 01

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LANGLEY-11647 B75-10156 02

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VARGO, D. J.

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M-FS-21424 B71-10519 03

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GSFC-10065 B70-10346 02
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GSFC-10913 B72-10649 08
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- VINCENT, D. A.**
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NPO-11431 B71-10281 06
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- VINSON, W. D., JR.**
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M-FS-24325 B74-10151 06
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Computer program for buckling loads of orthotropic laminated stiffened panels subjected to biaxial in-place loads (BUCLASP 2)
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XGS-10439 B70-10186 01
- VODICKA, V. W.**
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LEWIS-11354 B72-10151 03
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LANGLEY-10660 B71-10335 03
- VON VOLKLI, A. D.**
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
- VONROSENBERG, D. U.**
Numerical solution of potential flow problems in terms of flux components
M-FS-21751 B72-10667 09
- VONTHUNA, P. C.**
Tuneable diode laser spectrometer with integral grating
LANGLEY-11830 B75-10262 03
- VOS, R. G.**
Program for analysis of nonlinear equilibrium and stability (PANES)
M-FS-23172 B75-10100 09
- VOSS, J.**
Control of equilibrium pressure-temperature conditions in cryogenic storage
M-FS-18115 B70-10122 03
- VOTH, R. O.**
Cavitation data for hydraulic equipment
LEWIS-11642 B72-10384 07
- VRANCIK, J. E.**
High-frequency wattage-to-voltage converter
LEWIS-10822 B70-10049 01
Prediction of windage power loss in alternators
LEWIS-10939 B71-10074 06
- Inexpensive programmable computer clock
LEWIS-11797 B73-10308 02
- VU-SON, C.**
Elimination of redundancy in telemetered data
HQ-10585 B70-10431 06
- VYKUKAL, H. C.**
Space suit may have orthotic applications
ARC-10275 B72-10297 05
Restraint and locomotion aid
ARC-10153 B72-10558 06
Master/slave manipulator system
ARC-10756 B73-10496 06

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Astronaut Rescue Air Pack /ARAP/ and Emergency Egress Air Pack /EEAP/
KSC-10522 B70-10680 03
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Logic controlled solid state switchgear
LEWIS-12044 B73-10408 02
- WADIA, A. B.**
Techniques for improving reliability of computers
M-FS-21326 B72-10109 02
- WAGES, C. G.**
Ultrasonic scanning system for in-place inspection of brazed-tube joints
M-FS-21166 B71-10227 06
- WAGLE, E. M.**
Laser addressed holographic memory system
M-FS-22565 B73-10155 03
- WAGNER, C. E.**
Novel valve for reciprocating compressors - Concept
MSC-15060 B70-10160 07
- WAGNER, H. A.**
Three-dimensional pantograph for use in hazardous environments
NUC-10222 B70-10567 07
- WAKEFIELD, M. E.**
Explosive welding technique for joining aluminum and steel tubes
MSC-14721 B74-10272 08
- WALDRON, W.**
High-temperature pump-motor assembly
LEWIS-10256 B71-10100 07
- WALKER, G. L.**
Flat conductor cable survey
M-FS-22493 B73-10055 01
- WALKER, H. M.**
High temperature autoclave vacuum seals
M-FS-21131 B71-10433 08
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Investigations of multiple jets in a crossflow
LEWIS-12102 B75-10149 03
- WALKER, R. L., JR.**
Solubility of non-polar gases in electrolyte solutions
LEWIS-11052 B70-10114 04
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A test and measurement technique for determining possible lightning-induced voltages in aircraft electrical circuits
LEWIS-12109 B75-10068 02

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Unified hatch system
MSC-15813 B71-10095 06
- WALL, W. A.**
Closed-circuit television welding-electrode guidance system
M-FS-23026 B74-10150 02
- WALLACE, G. H.**
Metal alloy resistivity measurements at very low temperatures
NUC-10557 B71-10104 04
- WALLACE, G. R.**
Pre-emphasis determination for an S-band constant bandwidth FM/FM station
M-FS-22135 B73-10170 02
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Directionally solidified superalloy
HQ-10522 B70-10058 04
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Mercury in the environment
AEC-10048 B72-10233 05
- WALLACE, S. D.**
Flexible thermal device
M-FS-21630 B72-10612 04
- WALLHAGEN, R. E.**
Fluoric-controller pneumatic stepping motor system
LEWIS-11051 B70-10332 02
- WALLINGFORD, W. M.**
Four-phase differential phase shift resolver
JSC-14065 B73-10093 02
- WALLS, B. F.**
A simple dead-reckoning navigational system
M-FS-21165 B72-10409 02
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Interaction of crippling and torsional-flexural instabilities for centrally loaded columns
M-FS-20556 B70-10598 06
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Design and fabrication of an experimental image forming light modulator
M-FS-22547 B73-10182 03
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Traveling-wave photodetector has sub-nanosecond response
GSFC-10831 B70-10641 02
- Microwave biasing improves detector response in the infrared region
GSFC-11050 B71-10313 01
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Interferometric rotation sensor
ARC-10278 B72-10274 03
- WALTER, G. W.**
Self-forming shim or gasket for mounting heavy equipment
KSC-10504 B70-10289 07
- WALTER, R. J.**
The columbium-hydrogen system and hydrogen embrittlement of columbium
M-FS-18659 B70-10146 04
- Effects of high pressure hydrogen on metals
M-FS-18612 B70-10162 04
- Low-temperature embrittlement of Ti-6Al-4V and Inconel-718 by high pressure hydrogen
M-FS-18753 B70-10364 04
- Hydrogen-environment embrittlement of metals: A study
M-FS-22540 B73-10168 04
- WALTON, W. C., JR.**
Vibration characteristics of ring-stiffened orthotropic shells of revolution
LANGLEY-10989 B71-10535 09
- WANG, E. S. J.**
Baffle to confine glow discharge in ion pump
M-FS-21575 B72-10324 03
- WANG, G. Y.**
Array multiplier
ERC-90076 B70-10047 02
- WANG, S. C.**
Enhanced Lamb dip for absolute laser frequency stabilization
HQ-10695 B72-10481 02
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Resonant chambers for suspending materials in air
NPO-13263 B75-10050 03
- Heat-operated cryogenic electrical generator
NPO-13303 B75-10116 03
- WANG, W. S.**
Gas chromatograph sample-transfer valve
ARC-10427 B71-10474 04
- Two-stage coaxial gas compressor
ARC-10426 B72-10210 06
- Miniature high pressure regulator
ARC-10428 B72-10211 07
- WARD, J. B.**
Fluid injection device for high-pressure systems
MSC-15635 B70-10307 06
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Holographic photography of high velocity particles
ERC-10318 B70-10371 03
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Electromagnetic simulation of microwave backscatter from the ocean surface - A feasibility study
M-FS-20476 B71-10016 01
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Time-synchronized VLF phase-tracking receiver
NPO-11600 B73-10275 02
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Quartz crystal microbalance use in biological studies
NPO-11346 B72-10243 05
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Quantitative conversion of water to carbon dioxide
NPO-10731 B70-10013 04
- WARFIELD, R. L.**
Pressure-probe assembly for wind tunnels
ARC-10569 B72-10248 03
- WARMBIER, H. C.**
Control of nonenzymatic browning in intermediate-moisture foods
MSC-14835 B75-10317 05
- WARNECK, P.**
Photoionization mass spectrometer
HQ-10167 B70-10113 03
- Improved photoionization mass spectrometer
LANGLEY-10180 B70-10402 04
- WARNER, D. A.**
Synthesis of a new class of highly fluorinated aliphatic diisocyanates
M-FS-20883 B71-10300 04
- WARNER, M. R.**
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- WARR, R. E.**
Development of chip passivated monolithic complementary MISFET circuits with beam leads
M-FS-22264 B72-10696 01
- WARREN, C. G.**
Simultaneous random and sequential computer processing using an expanded sequential index
M-FS-20266 B70-10265 09
- WARSHAWSKY, I.**
Small turbing-type flowmeters for liquid hydrogen
LEWIS-11535 B72-10331 06
- WATERS, W. J.**
High-temperature strength of prealloyed-powder products increased by heat/pressure treatment
LEWIS-11229 B71-10489 04
- High strength alloy for immediate temperature, 24 24 to 704 C (75 to 1300 F), applications
LEWIS-11634 B72-10344 04
- High strength nickel base alloy, WAZ-16, for applications up to 2200 F
LEWIS-12270 B74-10082 04
- WATSON, D. A.**
Executive computer program for linking independent computer programs: ODINEX
LANGLEY-11324 B75-10194 09
- WATSON, H. K.**
Tolerance analysis program
MSC-17487 B71-10389 09
- WATSON, J. E.**
Low cost, logarithmic mass flow computer
LEWIS-11001 B71-10407 06
- WATTERSON, R. F.**
Isosceles detector provides maximum resolution in expanded range
GSFC-10932 B71-10279 01
- WAYLAND, H. J.**
Automatically-focusing microscope system for live tissue observation
NPO-13215 B75-10048 03
- WEATHERS, G.**
Design procedure for improved active filters
M-FS-20445 B70-10238 02
- WEAVER, E. A.**
Laser system detects air turbulence
M-FS-21244 B73-10210 03
- WEAVER, E. C.**
Assessment of water pollution by airborne measurement of chlorophyll
ARC-10648 B72-10566 04
- WEAVER, E. L.**
A tool for measuring elevator cable tension
KSC-10708 B72-10509 07
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Control system for an artificial heart
LEWIS-11057 B70-10469 05
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LEWIS-11581 B72-10512 05
- WEBBON, B. W.**
Space-suit carbon dioxide absorption system: A concept
ARC-10546 B72-10168 05
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COPTRAN - A method of optimum communication systems design
ERC-10273 B70-10501 09

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LEWIS-11962 B73-10187 04
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Synthesis of temperature and solvent-resistant polymers
M-FS-20848 B72-10342 04
Thermally resistant polymers for fuel tank sealants
M-FS-21232 B72-10358 04
A new intermediate for the production of flexible stable polymers
M-FS-22355 B73-10080 04
- WEBSTER, W. H., JR.**
Heater improves cold-temperature capacity of silver-cadmium batteries
GSFC-11913 B75-10071 01
- WEEKS, G. E., JR.**
Precision die-punch for trimming the conductors of flat conductor cable
M-FS-20142 B71-10419 08
Multiedge slit for FCC
M-FS-20112 B71-10457 08
- WEETON, J. W.**
Grinding as an approach to the production of high-strength, dispersion-strengthened nickel-base alloys
LEWIS-10515 B70-10185 04
Metal-metal reinforced laminar composites
LEWIS-11790 B73-10068 04
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Low-noise K(u)-band receiver input system
NPO-13645 B75-10281 02
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Nondestructive-test standards for evaluation of fiber-reinforced composites
M-FS-21288 B72-10157 04
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Shuttle orbiter storage locker system: A study
JSC-14448 B73-10287 08
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Rotary shutter mechanism contains optical elements
GSFC-11244 B72-10387 03
- WEINBERG, A. F.**
Nonmetallic impurities improve mechanical properties of vapor-deposited tungsten
LEWIS-10800 B72-10454 04
- WEINBERGER, W. R.**
Densification of powder metallurgy billets by a roll consolidation technique
LEWIS-11395 B73-10040 08
- WEINER, L.**
Two-axis leveling detector system
M-FS-21344 B72-10392 02
- WEINER, R. S.**
Long-term material compatibility testing system
NPO-11776 B73-10385 04
- WEINSTEIN, L.**
Rapid method for determination of antimicrobial susceptibilities pattern of urinary bacteria
GSFC-12039 B75-10253 05
- WEINSTEIN, L. M.**
Improved photographic prints with a linear radial transmission filter
LANGLEY-11221 B73-10242 03
- WEINSTEIN, S.**
JPL transient radiation analysis by computer program (JTRAC)
NPO-13470 B75-10053 09
- WEISBACH, M. F.**
Detection of nitric oxide pollution
ARC-10709 B73-10018 03
- WEISENBACH, P.**
A high yield neutron target
LEWIS-12058 B74-10066 03
- WEISSBART, J.**
Oxygen reclamation with solid oxide electrolytes
ARC-10487 B72-10273 03
- WEITZEL, D. H.**
High precision cryogenic thermal conductivity standards
NUC-10555 B70-10310 04
- WELIKY, N.**
Metered oxygen supply aids treatment of domestic sewage
ARC-10024 B72-10557 05
- WELLMAN, J. B.**
Transonic divider for gas chromatograph effluents
NPO-11479 B72-10706 03
- WELLS, F. E.**
Gas flowmeter
M-FS-20663 B70-10050 07
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AUTOTEM - Automated geometry meshing and heat conduction calculation
NUC-10241 B71-10039 09
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Equipment-tolerant range code demodulation method - A concept
M-FS-13987 B70-10267 01
- WEN, L.**
Performance of silicon solar cell assemblies
NPO-11847 B72-10186 01
- WENCKUS, J.**
Improved synthesis of intermetal compounds
HQ-10690 B72-10172 04
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Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
- WENDLING, D. A.**
Suspension system for lightweight cryogenic tank
MSC-14080 B75-10270 06
- WENSLEY, J. R.**
Technique for experimental determination of radiation interchange factors in solar wavelengths
MSC-13476 B71-10066 03
- WENTWORTH, C.**
Contact material for pressure-sintering ferrites
ERC-10213 B70-10380 01
- WESTBROOK, R. M.**
Constant-amplitude RC oscillator
ARC-10262 B70-10338 01
Narrowband, crystal-controlled biomedical telemetry system
ARC-10708 B72-10255 01
- WESTFALL, L. J.**
Floating zone process for drawing small diameter fibers of refractory materials
LEWIS-11380 B72-10491 04
- WESTON, C. R.**
A mathematical model of the effect of a predator on species diversity
NPO-11230 B70-10006 05
- WETLI, R. G.**
Electrometer system measures nanoamps at high voltage
LEWIS-12267 B74-10064 01
- WEXLER, M.**
Evaluation of omniweave reinforcement for composite fabrication
M-FS-20946 B71-10245 04
- WHEATON, H. L.**
Oxidation resistant iron and nickel alloys for high temperature use
LEWIS-10936 B70-10210 04
- WHEELER, A.**
Trace contaminant adsorption and sorbent regeneration in closed ecological systems
LANGLEY-10681 B72-10328 04
- WHETSTONE, W. D.**
Snap dynamics
M-FS-21531 B72-10265 09
- WHIDBY, J. F.**
Oxygen sensitive paper
M-FS-22354 B73-10103 04
Calibration of dissolved oxygen standard for analysis with methylene blue
M-FS-22353 B73-10147 04
- WHIFFEN, E. L.**
Grain refinement control in gas-shielded arc welding of aluminum tubing
JSC-19095 B73-10508 08
- WHITAKER, A. F.**
Ferrolubricants
M-FS-23151 B75-10078 07
- WHITAKER, D.**
Determination of impact sensitivity of materials at high pressures
MSC-13700 B72-10216 07
- WHITE, E.**
NASA-tricot - A lightweight radar reflective, knitted fabric
LANGLEY-10776 B71-10342 04
- WHITE, E. C.**
Lightweight inflatable material with low permeability
LANGLEY-10928 B73-10400 04
- WHITE, J. S.**
Variable dimension automatic synthesis programs (VASP)
ARC-10616 B72-10065 09
- WHITEHEAD, C.**
Air lock mechanism speeds specimen testing in high-temperature vacuum furnaces
LANGLEY-10841 B71-10493 07
- WHITING, E. E.**
A new solid-state logarithmic radiometer
ARC-10287 B70-10633 02
Increasing the response of PIN photodiodes to the ultraviolet
ARC-10274 B72-10053 03
- WHITLOCK, F. H.**
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09
- WHITLOCK, J.**
Automated Data Management Information System (ADMIS)
KSC-10619 B73-10053 09
- WHITTEN, D. E.**
Low leak rate poppet-and-seat check valve
MSC-13587 B70-10688 07
- WHITTICK, J. S.**
Evaluation of polymeric products for use in thermal-vacuum environment
NPO-11288 B70-10612 04
Materials data handbook on titanium 6Al-4V
M-FS-22796 B73-10372 04

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M-FS-22798 B73-10373 04
Materials data handbook on Inconel Alloy 718
M-FS-22793 B73-10396 04
Materials data handbooks on stainless steels
M-FS-22797 B73-10397 04
- WHYMARK, R. R.**
Levitation of objects using acoustic energy
M-FS-23261 B75-10232 03
- WIBERG, R. E.**
Combustion products generating and metering device
GSFC-11095 B74-10036 04
- WICK, W. O.**
Flammability control for electrical cables and connectors
M-FS-21584 B73-10235 02
- WIEBE, E. R.**
Improved thermal isolation for superconducting magnet systems
NPO-11875 B74-10158 02
Transmission line for S-band masers
NPO-13504 B75-10126 03
- WIEDEKAMP, K. E.**
A method for the visual detection of holes in thin polymeric films
LEWIS-10876 B70-10027 04
Use of thin plastic films at cryogenic temperatures
LEWIS-11047 B72-10038 04
- WIER, D. D.**
Formulas establish audio range inductance in beryllium coils
M-FS-14244 B70-10281 02
- WIGGINS, C. P.**
Transmitter switch for high-power microwave output
NPO-13439 B75-10122 02
- WIKER, G. A.**
Soldering iron temperature indicator
NPO-11545 B72-10098 02
- WILBER, R. L.**
Portable light detection system for the blind
M-FS-22403 B73-10099 05
- WILBERS, O. J.**
Evaluation of thermal insulation materials
NPO-11586 B73-10020 04
- WILBUR, R. L.**
Bipotential monitoring with inexpensive office-type cassette recorders
M-FS-22566 B73-10167 02
- WILGUS, D. S.**
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Suspension of objects in magnetic and electric fields
JSC-14170 B73-10058 03
- WILKE, C. R.**
Analytical methods for bacterial kinetics studies
LRL-10011 B71-10192 05
- WILKENING, H. D.**
Program to determine space vehicle response to wind turbulence
M-FS-21614 B72-10410 09
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An improved gas extraction furnace
MSC-14138 B72-10544 04
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LANGLEY-10705 B70-10525 05
Microbiological surface sampling cart
LANGLEY-11069 B72-10395 05
Automatic agar tray inoculation device
LANGLEY-11074 B72-10637 05
Automatic microbial transfer
LANGLEY-11354 B73-10229 05
Measuring micro-organism gas production
LANGLEY-11326 B73-10241 05
Detecting and measuring metabolic byproducts by electrochemical sensing
LANGLEY-11525 B73-10523 05
Domestic wash water reclamation
LANGLEY-11606 B74-10177 04
Automated single-slide staining system
LANGLEY-11649 B74-10188 05
- WILKINSON, M. C.**
A study of radiation environment in space and its biological effects
HQ-10798 B72-10662 03
- WILL, H. A.**
Casting copper to tungsten for high-power arc lamp cathodes
LEWIS-12169 B74-10011 04
Improved epitaxial process for fabricating silicon carbide semiconductor devices
LEWIS-12094 B74-10017 04
- WILLIAMS, B. A.**
A thermocouple thermode for small animals
ARC-10550 B72-10559 05
Thermistor holder for skin-temperature measurements
ARC-10855 B74-10119 05
Liquid-cooled liner for helmets
ARC-10534 B74-10249 05
Quick-change absorption column
ARC-10952 B75-10142 03
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NPO-12011 B70-10702 01
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High energy density electrochemical cell
LEWIS-10969 B70-10151 01
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Technique for producing bipolar and MOS field effect transistors on a single chip
MSC-13358 B70-10218 01
- WILLIAMS, E. F.**
Automatic water inventory, collecting, and dispensing unit
LANGLEY-11071 B72-10663 06
- WILLIAMS, F. T.**
Portable vibration exciter
KSC-10069 B70-10339 07
- WILLIAMS, H. E.**
Stability of structural rings under uniformly distributed radial loads
NPO-11396 B70-10236 06
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RF antenna-pattern visual aids for field use
KSC-10821 B73-10426 02
- WILLIAMS, J. L.**
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LANGLEY-11728 B75-10197 01
- WILLIAMS, J. R.**
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M-FS-20687 B70-10123 01
Holographic analysis of thin films
M-FS-20823 B70-10654 08
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NPO-10440 B70-10676 04
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MSC-12600 B75-10314 04
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NPO-13140 B75-10046 02
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NUC-11029 B70-10591 03
- WILLIAMSON, O. L.**
A summary report on system effectiveness and optimization study
M-FS-22126 B73-10104 09
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Photosensitive plastic used to produce three-dimensional casting patterns
LANGLEY-10742 B71-10127 08
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Compensator design for low-sensitivity linear time-invariant systems (COMPDES)
M-FS-21652 B72-10486 09
- WILLSON, R. C.**
Active cavity radiometer, type III - An automatic, absolute standard, highly accurate detector
NPO-11504 B71-10131 03
- WILMOT, D. W.**
Directional coupler for optical waveguides
ERC-10094 B70-10381 03
- WILSON, A. H.**
Velocity accelerator for particles
NPO-11349 B72-10082 03
- WILSON, E. J.**
High-temperature capacitive strain measurement system
FRC-10053 B75-10069 01
- WILSON, J. C.**
Control vane for engine exhaust flow
LANGLEY-11570 B74-10138 06
- WILSON, J. H.**
High current compensation network for dc logarithmic amplifiers
NUC-10148 B71-10128 01
- WILSON, L. R.**
Wide deviation phase modulator
LANGLEY-11607 B74-10178 02
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LEWIS-11473 B72-10150 04
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LANGLEY-10539 B70-10520 04
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Intermolecular bonding of metals or alloys by thermochemical decomposition
M-FS-13823 B70-10194 08
- WILSON, S. D.**
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KSC-10662 B71-10272 03

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NPO-11689 B72-10702 03
- WILSON, S. W., JR.**
Overlapped conic simulation of three-body trajectories
MSC-13460 B70-10536 03
- WILSON, W. C.**
Testing device for verifying the performance of digital recorders
KSC-10300 B70-10149 01
- WILTENS, J. F.**
Stem clutch for motor driven valve
LRL-10032 B72-10345 07
- WILTON, M. E.**
Computer program for compressible flow network analysis
LEWIS-11859 B73-10246 09
- WIMMER, H. L.**
Electronic position indicator for latching solenoid valves
LEWIS-10926 B70-10174 01
- WINDSOR, H. F.**
Coplanar interconnection module
ERC-10237 B70-10378 01
- WINE, G. W.**
Removal of filler material from large high energy formed parts
M-FS-16326 B72-10104 06
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Improved high-temperature gimbal joint
LEWIS-11705 B72-10489 06
- WINGET, C.**
Flexible temperature probe for biological systems
ARC-10796 B73-10498 05
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NPO-11962 B74-10163 02
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ARC-10393 B71-10255 04
Fabrication techniques for polybenzimidazole composites
ARC-10724 B73-10269 04
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M-FS-20615 B70-10191 01
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M-FS-21074 B71-10353 03
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LEWIS-11221 B70-10634 04
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Tissue holder for experimental and Demonstration Surgery
LEWIS-11755 B72-10630 05
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Fabrication of composite fan blades using PMR A-type polyimide resin and graphite fiber reinforcement
LEWIS-12366 B75-10066 04
- WINTHER, B. A.**
Prediction of unsteady aerodynamic loadings caused by trailing-edge control-surface motions in subsonic compressible flow
LANGLEY-11175 B74-10091 06
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Sequential-strip and sequential-disk filters
JSC-14592 B73-10430 06
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M-FS-21129 B72-10360 03
- WIRTH, M. N.**
High-speed data word monitor
ARC-10899 B75-10129 02
- WISANDER, D. W.**
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LEWIS-10887 B70-10573 04
- WISE, J. P.**
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KSC-10793 B75-10255 01
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LEWIS-11926 B73-10064 09
- WITT, A. F.**
Preparation of homogeneous vitreous materials for electronic and optical devices
HQ-10670 B71-10172 04
- WITT, J.**
Double precision trajectory program /DPTRAJ 2.2C/
NPO-11798 B71-10390 09
- WITTRICK, E. P.**
Metal-shearing energy absorber
HQ-10638 B71-10503 07
- WITZ, S.**
Continuous detection of viable micro-organisms by chemiluminescence
MSC-10170 B75-10170 05
- WITZ, S. W.**
Automated monitoring of recovered water quality
LANGLEY-11203 B74-10029 05
- WIZENICK, R. J.**
Sheet plastic filters for solar cells
NPO-11464 B72-10090 04
- WOELLER, F. H.**
'Dry-column' chromatography of plant pigments
ARC-10780 B73-10271 04
- WOHLER, R.**
Synthesis of dynamic systems
M-FS-21490 B71-10491 09
- WOJCIECHOWSKI, C. J.**
Study of high altitude plume impingement
M-FS-21414 B72-10601 09
- WOJTASINSKI, R. J.**
An automatic lightning detection and photographic system
KSC-10728 B73-10043 02
Measuring the electric field of a cloud
KSC-10731 B73-10074 02
- WOJTASZEK, E. W.**
Improved general-purpose namelist processor
LANGLEY-11834 B75-10263 09
- WOLFE, H.**
Interplanetary Trajectories, Encke Method (ITEM)
GSFC-11576 B72-10604 09
- WOLTHUIS, R. A.**
Contourgraph display system for monitoring electrocardiograms
MSC-13407 B70-10030 05
- Automated analysis of blood pressure measurements (Korotkov sound)
MSC-13999 B72-10756 05
- Computer program for analysis of vectorcardiograms (VECTAN II)
MSC-14386 B75-10106 09
- WONG, H. Y.**
Triangular-wave generator with controlled sweep polarity
ARC-10332 B71-10166 03
- WONG, T. L.**
Analysis and computer programs to calculate acoustic wave properties of baffled chambers
LEWIS-11529 B72-10577 09
- WOO, D. S.**
P-channel silicone gate FET
M-FS-22505 B73-10197 01
- WOO, K. E.**
Circularly-polarized multiband telemetry tracking antenna
NPO-11264 B73-10288 02
- WOO, R. T.**
Design method for minimizing RF voltage breakdown
NPO-13408 B73-10520 01
Method for remotely sensing turbulence of planetary atmospheres
NPO-13154 B74-10168 03
Low-loss, circularly-polarized dichroic plate
NPO-13171 B74-10283 01
- WOOD, G. M.**
Determination of water content using mass spectrometry
LANGLEY-11774 B75-10157 04
Dynamic delta method for trace gas analysis
LANGLEY-11800 B75-10159 04
- WOOD, G. M., JR.**
Null type instrument for simplifying two dimensional field plotting
XLA-08493 B70-10192 01
- WOOD, S. M., JR.**
A high-speed spectrograph shutter
HQ-10635 B73-10368 01
- WOODALL, J. M.**
Improved photovoltaic devices, using transparent contacts
LANGLEY-11761 B75-10220 01
- WOODBURY, R. C.**
Laser-scanning techniques for rapid ballistics identification
NPO-11861 B74-10102 03
- WOODBURY, R. C.**
Digital decorrelator saves time and expense in acoustic testing of structures
NPO-11542 B71-10157 03
Control of acceleration in sine/random vibration tests
NPO-11482 B72-10091 02
Standard environmental testing practices
NPO-11567 B72-10101 02
Gated compressor, distortionless signal limiter
NPO-11820 B73-10387 01
- WOODRUFF, N. L.**
Inorganic bonding of semiconductor strain gages
GSFC-10833 B70-10215 08
- WOODS, J. M.**
Kaleidoscopic light feedback for television systems
MSC-12386 B71-10068 03

WOODWARD, F. A.

Improved method for aerodynamic analysis of wing-body-tail configurations in subsonic and supersonic flow
 LANGLEY-11305 873-10470 06

WOOLLMAN, J. A.

Magnetometer uses bismuth-selenide
 LEWIS-11632 872-10629 03

WORLEY, J.

Magnesium oxide doping reduces acoustic wave attenuation in lithium metatantalate and lithium metaniobate crystals
 ERC-10463 870-10269 03

WORTMAN, J. J.

Thin film devices used as oxygen partial pressure sensors
 XLA-06473 870-10419 04
 Particulate and aerosol detector
 LANGLEY-11434 873-10357 04

WRENCH, E. H.

Optical monitoring system
 M-FS-21692 873-10050 03

WRIGHT, B. J.

Low heat-gain cryogenic-liquid transfer system
 MSC-15165 870-10306 07

WRIGHT, D.

An improved aesthesiometer
 MSC-13609 872-10032 05

WRIGHT, H. A.

The impact of water on free-falling bodies
 M-FS-23310 875-10311 03

WRIGHT, H. W., JR.

Gas chromatograph sample-transfer valve
 ARC-10427 871-10474 04
 Two-stage coaxial gas compressor
 ARC-10426 872-10210 06
 Miniature high pressure regulator
 ARC-10428 872-10211 07

WRIGHT, L. S.

Programmed multiplexing system simultaneously monitors several voltages
 MSC-17139 871-10517 02

WRIGHT, W. H.

Voltage regulator with multiple parallel power source sections
 GSFC-10891 870-10195 02

WRISTON, R. S.

Measurement of X-ray scattering by optical surfaces
 GSFC-11590 873-10283 03

WU, R. W.

Computer program for transient response of structural rings subjected to fragment impact
 LEWIS-11926 873-10064 09

WUERKER, R. F.

Multifrequency laser beams for holographic contouring
 ARC-10341 871-10534 03

WUNSCH, H. P.

Closed-circuit television welding-electrode guidance system
 M-FS-23026 874-10150 02

WYCOFF, K. C.

Thermocouple installation in thin-walled tubes
 LEWIS-11222 870-10655 01

WYDEVEN, T.

Catalyst for sodium chlorate decomposition
 ARC-10584 872-10305 04

Stabilization of porous glass reverse-osmosis membranes
 ARC-10646 872-10309 04

Purification of contaminated water by filtration through porous glass
 ARC-10655 872-10412 04

Rapid evaluation of reverse-osmosis membranes
 ARC-10659 872-10413 04

Oxygen plasmas used to synthesize superoxides
 ARC-10686 872-10570 04

Reverse-osmosis membranes by plasma polymerization
 ARC-10696 872-10710 04

Moisture-resistant coatings for optical components
 ARC-10749 873-10507 04

Dielectric films improve life of polymeric insulators
 ARC-10892 875-10084 04

WYNVEEN, R. A.

Aircrew oxygen system
 ARC-10247 872-10195 05
 Iodine generator for disinfecting reclaimed water
 MSC-14632 874-10153 05

Y**YAGELOWICH, J.**

Self-synchronizing, bi-orthogonal coded PCM telemetry system
 GSFC-11237 871-10324 02

YAGER, S. P.

Ultra-high molecular sink vacuum chamber
 NPO-10799 870-10130 03

YAGER, T. J.

A new method for measuring slipperiness of airport runways and other paved surfaces
 LANGLEY-10795 870-10712 06

YAMADA, H. Y.

Measurement of temperature profiles in hot gases and flames
 LEWIS-12055 874-10060 03

YANG, J. N.

A mathematical model of the effect of a predator on species diversity
 NPO-11230 870-10006 05

Optimum structural design based on reliability analysis
 NPO-11261 870-10399 06

Optimization of structures on the basis of fracture mechanics and reliability criteria
 NPO-11645 873-10276 06

Probability of stress-corrosion fracture under random loading
 NPO-13113 873-10453 04

YANG, J.-N.

Peak structural response to nonstationary random excitations
 NPO-11617 871-10188 06

Analytical procedure for estimating reliability of randomly excited structures
 NPO-11618 871-10189 06

YANG, L. C.

Laser-actuated mechanical device
 NPO-13105 874-10166 03

Laser system to detonate explosive devices
 NPO-11743 874-10194 03

Compact laser through improved heat conductance
 NPO-13147 875-10176 03

YANG, P. B.

New structural approach for determining load carrying capability of filament wound composite materials
 M-FS-15121 870-10408 06

YASS, K.

A low cost "Air Mass 2" solar simulator
 LEWIS-12266 874-10086 02

YASUI, R. K.

Performance of silicon solar cell assemblies
 NPO-11847 872-10186 01
 Facility for testing solar cells
 NPO-11761 874-10099 02
 Thermoelastic analysis of solar cell arrays and their material properties
 NPO-13458 874-10301 03

YASUI, S.

The use of the chatter mode in self-adaptive systems
 HQ-10159 870-10274 06

YATES, C. I.

Preparation of prepreg graphite tape with insoluble polymer
 JSC-14313 873-10084 04

YATES, J. E.

Improvements of Zeyded method for calculating flutter of flat panels
 M-FS-20955 872-10399 06

YAVNER, E. M.

Improved laboratory gradiometer can be a field survey instrument
 MSC-13980 872-10001 03

YEE, L.

Technique for producing wind-tunnel heat-transfer models
 ARC-10658 872-10349 08

YEE, S. T.

Improved high-temperature gimbal joint
 LEWIS-11705 872-10489 06

YEH, Y. C. M.

Laser-to-electricity energy converter for short wavelengths
 NPO-13390 875-10119 03

Laser action generated within a light pipe: A concept
 NPO-13531 875-10127 03

YEN, S. P. S.

Low-resistivity homogeneous elastomers
 NPO-11881 873-10349 04

Polyelectrolytes with high charge density
 NPO-11918 874-10159 04

Improved ion exchange membrane
 NPO-13309 875-10117 04

YINON, J.

Negative ion spectrometry for detecting nitrated explosives
 NPO-13082 874-10276 02

YOSHINO, S. Y.

Flame-resistant thin panels of glass fabric-polyimide resin laminates
 MSC-15562 870-10490 04

A new vibration dampening adhesive
 MSC-17668 872-10284 04

YOST, M. C.

Nondestructive assessment of penetration of electron-beam welds
 MSC-15955 870-10466 08

YOUNG, D. R.

Weight simulator
 ARC-10100 872-10046 05

- Programmed physiological infusion system
ARC-10447 B72-10126 05
In vivo measurement of mechanical impedance of bone
ARC-10857 B74-10245 05
- YOUNG, J. D.**
Cubic spline functions for curve fitting
LRL-10034 B72-10311 09
- YOUNG, N.**
Toroidal mirrors provide virtual walls for breaks in light pipes
ARC-10031 B70-10632 03
Liquid-helium-cooled Michelson interferometer
ARC-10554 B72-10217 03
- YOUNG, S. G.**
Ultrasonic metal etching for metallographic analysis
LEWIS-11230 B71-10099 04
A new nickel-base wrought superalloy for applications up to 1033 K (1400 F)
LEWIS-11827 B74-10002 04
New nickel-base wrought superalloy with applications up to 1253 K (1800 F)
LEWIS-11828 B74-10003 04
Process to restore obliterated serial numbers on metal surfaces
LEWIS-12085 B74-10020 07
- YOUNGBLOOD, J. L.**
Influence of heat treatment on mechanical properties of 300M steel
MSC-14792 B75-10271 04
- YOUNGBLUTH, O., JR.**
Color-coded area sensitivity maps of photomultipliers
LANGLEY-10320 B74-10259 01
- YPMA, J. E.**
Stripe-line coil for magnetic-field generation in bubble memory devices
LANGLEY-11705 B75-10195 01
Open coil structure for bubble-memory-device packaging
LANGLEY-11704 B75-10219 01
- YU, J. G.**
Contact-eutectic-lens fabrication technique
M-FS-23275 B75-10308 04
- YUE, A. S.**
Contact-eutectic-lens fabrication technique
M-FS-23275 B75-10308 04
- YUNG, A. K.**
Complementary-MOS binary counter with parallel-set inputs
ERC-10122 B70-10373 01
- Z**
- ZABOWER, H. R.**
Hand-held photomicroscopy system
ARC-10468 B72-10190 03
- ZACHRY, C. L.**
Low-loss stripe-line coil for magnetic bubble memory
LANGLEY-11707 B75-10196 01
- ZAGARINS, J.**
Magnetic-doped alloys with very large Seebeck coefficients
M-FS-21410 B72-10318 04
- ZAGOTTA, W. E.**
Fast-neutron spectrometer developments
M-FS-22279 B73-10116 03
- ZAHLAYA, B. A.**
Improved vacuum probe collects surface-contamination samples
LANGLEY-10623 B71-10475 05
- ZALEWSKI, E. F.**
An absorption spectrum amplifier for determining gas composition
HQ-10752 B72-10524 03
- ZANE, R.**
PUZZLE - A program for computer-aided design of printed circuit artwork
LRL-10050 B71-10122 09
- ZANIEWSKI, J.**
Fabrication of optical reflecting diffraction gratings by light-interference phenomenon
GSFC-11860 B73-10516 03
- ZARETSKY, E. V.**
Liquid cryogenic lubricant
LEWIS-11075 B70-10347 07
Simple technique extends life of angular-contact ball bearings
LEWIS-11117 B70-10535 07
Common bearing material has highest fatigue life at moderate temperature
LEWIS-11592 B72-10382 04
Study of hot hardness characteristics of tool steels
LEWIS-11785 B72-10583 04
Carbide factor predicts rolling-element bearing fatigue life
LEWIS-11940 B73-10008 07
Long life, high speed, thrust-load ball bearings
LEWIS-12269 B75-10022 06
Silicon nitride used as a rolling-element bearing material
LEWIS-12447 B75-10134 06
- ZEIGER, R. J.**
Mechanical planetary compensating drive system
ARC-10462 B73-10497 06
- ZELLER, J. R.**
Performance-limit criteria for the design of fast-response servo-actuation systems
LEWIS-11022 B70-10152 02
- ZELLNER, G.**
Self-replaceable thermocouple for molten steel bath - A concept
NUC-10223 B71-10125 01
- ZEMAN, J. R.**
Lamp modulator provides signal magnitude indication
KSC-10565 B70-10700 01
- ZERLAUT, G. A.**
Improved thermal paint formulation
M-FS-14706 B71-10180 03
Study of in-situ degradation of thermal control surfaces
M-FS-20892 B72-10336 04
Investigation of environmental effects on coatings for thermal control
M-FS-21932 B72-10596 04
- ZETO, R. J.**
Mechanism and kinetics of aging in Inconel 718
M-FS-18775 B70-10261 04
- ZIEGELMEIER, P.**
Accurate pointing of tungsten welding electrodes
ARG-10449 B71-10048 08
- ZIEGLER, H.**
Investigation of exit-velocity stratification effects on jets in a crossflow (STRJET)
LANGLEY-11581 B74-10207 09
- ZILL, J. A.**
Response of tantalum capacitors to fast transient overvoltages
MSC-14822 B75-10274 01
- ZINN, B. T.**
Computer program to determine the irrotational nozzle admittance
LEWIS-12019 B73-10233 09
- ZINSLEY, W. M.**
Deflection resistance indicator
M-FS-24010 B72-10401 04
- ZIRKLE, L. D.**
Approximate properties of the response of nonlinear dynamic systems to stochastic inputs
M-FS-20717 B71-10273 03
- ZIVLEY, G.**
A compact battery powered digital thermometer
MSC-14084 B72-10545 02
- ZLATKIS, A.**
Gas chromatography of volatile organic compounds
JSC-14428 B73-10406 04
- ZMUDA, L. J.**
Foolproof quick-release locking pin
M-FS-18495 B70-10409 07
- ZOHAR, S.**
Fast Fourier transformation computer using fast counters
NPO-13110 B75-10175 02
- ZOLTAN, A.**
Safety monitoring system for radioisotope thermoelectric generators
NPO-13285 B73-10352 02
- ZORN, J. C.**
Metastable atom probe for measuring electron beam density profiles
M-FS-21593 B72-10485 03
- ZORUMSKI, W. E.**
Noise suppressor
LANGLEY-11141 B74-10261 03
- ZOSKY, E. W.**
Unified hatch system
MSC-15813 B71-10095 06
- ZUBER, N.**
Thermally induced oscillations in fluid flow
M-FS-20449 B70-10299 03
- ZUCKER, O. S.**
Electronic switching circuit uses complementary non-linear components
AEC-10060 B72-10236 01
- ZUECH, R. A.**
A method for obtaining high ductility in critical areas of aluminum castings
M-FS-18705 B70-10121 08
- ZUK, J.**
Computer program for analysis of flow across a gas turbine seal
LEWIS-10975 B70-10317 09
High speed, self-acting, face-contact shaft seal has low leakage and very low wear
LEWIS-11598 B72-10114 07
Computer program calculates quasi-one-dimensional flow across face seals and narrow slots
LEWIS-11996 B73-10248 09
Compressible flow computer program for gas film seals
LEWIS-12286 B75-10020 09
- ZUPAN, J.**
Continuous catalytic decomposition of methane
ARC-10339 B73-10016 03

ZURASKY, J. L.

Dual-wavelength system monitors
deposition of films - A concept
M-FS-20675 B70-10658 03

ZWEBER, C.

New understanding of fiber composite
materials
NPO-11605 B71-10161 04

ZWIENER, J. M.

Optical contamination during thermal
testing in vacuum
M-FS-20736 B70-10659 03

ZYGIELBAUM, A. I.

Communications link for SDS 900 series
computers
NPO-11161 B70-10163 02

ZYGIELBAUM, A. I.

Digital video display system
NPO-11342 B73-10132 02
Numerical interactive controller
NPO-11497 B73-10294 02

ORIGINATING CENTER/TECH BRIEF

NUMBER INDEX

Cumulative Index to NASA Tech Briefs

1970—1975

Originating Center/Tech Brief Number Index

The left hand column identifies the originating Center number; to the right of each originating Center number is the Tech Brief number, e.g., B75-10081, followed by a two-digit number, e.g., 03, which identifies the subject category containing the entire citation.

AEC-10003	B72-10039 03	ARC-10070	B71-10162 01	ARC-10269	B71-10230 02
AEC-10004	B72-10003 03	ARC-10073	B72-10268 01	ARC-10274	B72-10053 03
AEC-10007	B72-10146 03	ARC-10078	B71-10171 01	ARC-10275	B72-10297 05
AEC-10010	B72-10044 04	ARC-10084	B71-10445 02	ARC-10278	B72-10274 03
AEC-10011	B72-10371 05	ARC-10088	B71-10440 02	ARC-10280	B72-10269 04
AEC-10013	B72-10004 03	ARC-10090	B74-10109 02	ARC-10287	B70-10633 02
AEC-10017	B72-10430 04	ARC-10095	B70-10401 05	ARC-10288	B71-10528 06
AEC-10018	B72-10427 08	ARC-10096	B73-10266 09	ARC-10289	B70-10079 01
AEC-10019	B72-10428 08	ARC-10097	B70-10638 02	ARC-10292	B72-10054 01
AEC-10026	B72-10367 04	ARC-10099	B70-10450 04	ARC-10294	B72-10055 01
AEC-10036	B72-10368 03	ARC-10100	B72-10046 05	ARC-10295	B72-10121 06
AEC-10039	B72-10369 01	ARC-10101	B70-10161 02	ARC-10302	B72-10298 05
AEC-10042	B72-10240 03	ARC-10109	B71-10454 03	ARC-10303	B72-10197 07
AEC-10044	B72-10239 06	ARC-10131	B71-10233 07	ARC-10308	B72-10198 03
AEC-10046	B72-10365 04	ARC-10132	B71-10234 01	ARC-10311	B72-10041 08
AEC-10048	B72-10233 05	ARC-10135	B72-10451 04	ARC-10312	B72-10040 06
AEC-10049	B72-10429 05	ARC-10136	B71-10426 01	ARC-10314	B71-10443 04
AEC-10051	B72-10238 08	ARC-10137	B72-10047 01	ARC-10316	B71-10231 01
AEC-10053	B72-10235 04	ARC-10138	B70-10056 02	ARC-10319	B72-10199 04
AEC-10060	B72-10236 01	ARC-10140	B70-10509 07	ARC-10320	B72-10202 03
AEC-10062	B72-10366 04	ARC-10147	B70-10510 03	ARC-10322	B74-10071 03
AEC-10068	B72-10370 01	ARC-10148	B72-10192 03	ARC-10327	B71-10480 07
AEC-10070	B72-10234 04	ARC-10153	B72-10558 06	ARC-10329	B72-10203 05
AEC-10077	B72-10372 02	ARC-10154	B71-10284 09	ARC-10330	B72-10056 01
AEC-10079	B72-10373 03	ARC-10155	B72-10173 07	ARC-10332	B71-10166 03
AEC-10080	B72-10237 08	ARC-10156	B70-10631 03	ARC-10336	B71-10201 01
AEC-10083	B72-10231 04	ARC-10159	B70-10496 09	ARC-10337	B71-10525 08
AEC-10085	B72-10431 04	ARC-10160	B73-10499 02	ARC-10338	B72-10204 06
AEC-10088	B72-10364 04	ARC-10164	B72-10148 03	ARC-10339	B73-10016 03
AEC-10090	B72-10232 03	ARC-10173	B72-10048 03	ARC-10341	B71-10534 03
ARC-10007	B72-10191 02	ARC-10175	B71-10427 03	ARC-10345	B72-10122 07
ARC-10012	B70-10329 01	ARC-10176	B72-10296 02	ARC-10348	B72-10057 01
ARC-10019	B70-10407 01	ARC-10178	B70-10694 03	ARC-10349	B71-10114 01
ARC-10020	B70-10034 01	ARC-10181	B72-10193 05	ARC-10351	B72-10205 05
ARC-10024	B72-10557 05	ARC-10186	B71-10229 04	ARC-10356	B71-10143 03
ARC-10025	B71-10497 01	ARC-10194	B71-10112 03	ARC-10358	B70-10512 08
ARC-10030	B70-10237 01	ARC-10197	B72-10119 02	ARC-10359	B70-10637 09
ARC-10031	B70-10632 03	ARC-10198	B72-10188 03	ARC-10360	B71-10476 05
ARC-10032	B70-10508 01	ARC-10199	B71-10526 03	ARC-10362	B71-10477 05
ARC-10041	B72-10045 01	ARC-10200	B71-10177 01	ARC-10364	B72-10691 01
ARC-10049	B70-10568 05	ARC-10201	B71-10163 05	ARC-10370	B72-10206 03
ARC-10056	B71-10478 03	ARC-10203	B70-10636 07	ARC-10374	B72-10058 08
ARC-10064	B71-10204 01	ARC-10210	B71-10453 09	ARC-10375	B72-10123 03
		ARC-10213	B71-10113 03	ARC-10378	B71-10144 03
		ARC-10214	B71-10164 02	ARC-10384	B72-10160 03
		ARC-10215	B71-10165 04	ARC-10387	B72-10184 01
		ARC-10219	B72-10049 06	ARC-10388	B70-10439 03
		ARC-10223	B70-10615 09	ARC-10389	B71-10145 03
		ARC-10228	B71-10468 07	ARC-10391	B71-10265 03
		ARC-10238	B72-10050 02	ARC-10392	B71-10119 02
		ARC-10239	B72-10120 07	ARC-10393	B71-10255 04
		ARC-10244	B72-10246 03	ARC-10394	B71-10470 03
		ARC-10245	B72-10194 05	ARC-10399	B72-10189 05
		ARC-10246	B71-10203 03	ARC-10402	B71-10452 01
		ARC-10247	B72-10195 05	ARC-10403	B72-10207 03
		ARC-10248	B72-10219 05	ARC-10404	B72-10059 01
		ARC-10250	B72-10074 02	ARC-10405	B72-10060 01
		ARC-10252	B72-10051 02	ARC-10406	B72-10200 05
		ARC-10254	B71-10498 01	ARC-10408	B72-10208 03
		ARC-10255	B72-10052 02	ARC-10410	B72-10161 04
		ARC-10259	B71-10469 01	ARC-10411	B72-10061 05
		ARC-10262	B70-10338 01	ARC-10412	B72-10124 01
		ARC-10263	B72-10196 03	ARC-10413	B72-10179 07
		ARC-10264	B70-10337 01	ARC-10415	B72-10062 05
		ARC-10265	B70-10511 01	ARC-10417	B71-10527 03
		ARC-10268	B70-10420 05	ARC-10422	B72-10209 03

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

ARC-10423	B72-10125 05	ARC-10565	B73-10017 03	ARC-10754	B74-10046 06
ARC-10424	B71-10030 09	ARC-10566	B72-10418 04	ARC-10755	B74-10072 03
ARC-10426	B72-10210 06	ARC-10567	B72-10419 04	ARC-10756	B73-10496 06
ARC-10427	B71-10474 04	ARC-10568	B72-10247 04	ARC-10758	B75-10083 05
ARC-10428	B72-10211 07	ARC-10569	B72-10248 03	ARC-10759	B73-10492 05
ARC-10429	B71-10481 07	ARC-10570	B72-10420 04	ARC-10762	B74-10047 01
ARC-10430	B72-10299 09	ARC-10571	B72-10421 04	ARC-10763	B73-10506 02
ARC-10438	B72-10212 03	ARC-10572	B72-10422 04	ARC-10769	B73-10377 05
ARC-10441	B73-10029 06	ARC-10574	B72-10249 04	ARC-10771	B73-10502 06
ARC-10444	B71-10479 07	ARC-10582	B72-10250 06	ARC-10772	B73-10501 03
ARC-10445	B74-10110 01	ARC-10583	B72-10275 01	ARC-10773	B73-10378 03
ARC-10447	B72-10126 05	ARC-10584	B72-10305 04	ARC-10774	B73-10379 03
ARC-10448	B72-10171 03	ARC-10592	B72-10709 04	ARC-10775	B73-10380 06
ARC-10449	B72-10270 03	ARC-10593	B72-10561 01	ARC-10776	B73-10490 03
ARC-10450	B72-10452 01	ARC-10594	B72-10306 04	ARC-10779	B74-10073 04
ARC-10456	B72-10213 06	ARC-10596	B74-10112 01	ARC-10780	B73-10271 04
ARC-10459	B72-10063 04	ARC-10597	B72-10695 05	ARC-10781	B75-10141 03
ARC-10460	B72-10169 03	ARC-10598	B72-10563 03	ARC-10782	B73-10505 04
ARC-10461	B73-10493 03	ARC-10600	B72-10564 02	ARC-10783	B73-10341 04
ARC-10462	B73-10497 06	ARC-10601	B72-10251 03	ARC-10784	B73-10494 05
ARC-10463	B75-10081 03	ARC-10602	B72-10307 03	ARC-10785	B73-10381 03
ARC-10464	B72-10300 04	ARC-10603	B72-10308 01	ARC-10786	B75-10055 06
ARC-10466	B74-10170 02	ARC-10612	B72-10252 08	ARC-10787	B74-10048 06
ARC-10467	B72-10218 01	ARC-10613	B72-10423 04	ARC-10788	B74-10049 06
ARC-10468	B72-10190 03	ARC-10615	B72-10064 09	ARC-10789	B74-10050 02
ARC-10469	B73-10030 04	ARC-10616	B72-10065 09	ARC-10791	B74-10051 03
ARC-10471	B72-10020 03	ARC-10621	B72-10693 06	ARC-10792	B74-10052 04
ARC-10474	B72-10162 06	ARC-10631	B75-10082 03	ARC-10796	B73-10498 05
ARC-10480	B72-10163 06	ARC-10637	B73-10267 02	ARC-10797	B74-10053 04
ARC-10481	B72-10164 02	ARC-10642	B73-10262 03	ARC-10799	B73-10495 05
ARC-10484	B72-10008 03	ARC-10646	B72-10309 04	ARC-10802	B74-10243 03
ARC-10485	B72-10021 01	ARC-10647	B72-10565 04	ARC-10803	B74-10074 04
ARC-10486	B72-10009 06	ARC-10648	B72-10566 04	ARC-10806	B74-10171 02
ARC-10487	B72-10273 03	ARC-10649	B73-10268 03	ARC-10807	B75-10132 06
ARC-10488	B72-10220 05	ARC-10651	B72-10567 03	ARC-10816	B74-10172 05
ARC-10489	B72-10165 01	ARC-10653	B72-10310 03	ARC-10822	B74-10244 04
ARC-10490	B72-10214 09	ARC-10655	B72-10412 04	ARC-10823	B75-10056 04
ARC-10491	B72-10221 03	ARC-10656	B72-10549 03	ARC-10827	B74-10198 02
ARC-10492	B72-10127 03	ARC-10657	B72-10568 09	ARC-10828	B74-10055 03
ARC-10493	B72-10201 04	ARC-10658	B72-10349 08	ARC-10829	B74-10054 03
ARC-10495	B72-10022 06	ARC-10659	B72-10413 04	ARC-10832	B74-10056 03
ARC-10496	B72-10010 06	ARC-10660	B72-10414 07	ARC-10833	B74-10113 09
ARC-10498	B72-10023 09	ARC-10661	B72-10415 05	ARC-10837	B74-10057 04
ARC-10503	B72-10011 06	ARC-10677	B72-10424 04	ARC-10838	B74-10114 08
ARC-10504	B72-10012 06	ARC-10679	B72-10569 07	ARC-10839	B74-10058 06
ARC-10505	B72-10013 06	ARC-10680	B72-10550 04	ARC-10840	B74-10059 06
ARC-10506	B72-10024 06	ARC-10682	B72-10432 08	ARC-10842	B74-10115 02
ARC-10509	B72-10014 01	ARC-10686	B72-10570 04	ARC-10844	B74-10116 03
ARC-10511	B72-10025 08	ARC-10687	B72-10571 03	ARC-10845	B74-10075 05
ARC-10512	B74-10045 06	ARC-10689	B73-10031 03	ARC-10847	B74-10216 03
ARC-10514	B72-10301 05	ARC-10691	B73-10033 05	ARC-10848	B74-10173 03
ARC-10516	B72-10128 03	ARC-10694	B72-10572 03	ARC-10849	B75-10057 05
ARC-10519	B72-10692 06	ARC-10696	B72-10710 04	ARC-10850	B74-10117 03
ARC-10521	B72-10166 03	ARC-10702	B73-10130 03	ARC-10852	B74-10217 03
ARC-10522	B72-10222 09	ARC-10706	B72-10255 01	ARC-10853	B74-10118 03
ARC-10523	B72-10180 03	ARC-10708	B73-10018 03	ARC-10854	B74-10174 06
ARC-10524	B72-10026 03	ARC-10709	B75-10025 01	ARC-10855	B74-10119 05
ARC-10525	B72-10416 04	ARC-10711	B75-10131 06	ARC-10856	B74-10120 01
ARC-10527	B72-10167 02	ARC-10712	B75-10062 04	ARC-10857	B74-10245 05
ARC-10528	B72-10027 04	ARC-10714	B73-10504 04	ARC-10860	B74-10218 04
ARC-10529	B72-10215 04	ARC-10721	B72-10699 03	ARC-10861	B74-10219 04
ARC-10531	B72-10028 04	ARC-10723	B73-10269 04	ARC-10864	B75-10058 06
ARC-10532	B72-10029 04	ARC-10727	B73-10340 08	ARC-10867	B75-10026 03
ARC-10533	B72-10302 03	ARC-10729	B74-10196 01	ARC-10868	B74-10220 05
ARC-10534	B74-10249 05	ARC-10730	B73-10263 09	ARC-10869	B75-10027 04
ARC-10546	B72-10168 05	ARC-10734	B73-10264 01	ARC-10870	B75-10059 02
ARC-10550	B72-10559 05	ARC-10737	B73-10265 08	ARC-10879	B75-10133 09
ARC-10551	B74-10111 04	ARC-10741	B73-10375 08	ARC-10880	B75-10060 09
ARC-10553	B72-10223 04	ARC-10742	B73-10270 05	ARC-10881	B74-10175 04
ARC-10554	B72-10217 03	ARC-10743	B73-10500 02	ARC-10882	B74-10221 09
ARC-10555	B72-10303 05	ARC-10744	B75-10140 09	ARC-10889	B74-10246 03
ARC-10556	B72-10304 01	ARC-10745	B73-10272 05	ARC-10892	B75-10084 04
ARC-10557	B72-10417 02	ARC-10746	B73-10491 02	ARC-10899	B75-10129 02
ARC-10558	B72-10276 03	ARC-10747	B73-10376 04	ARC-10906	B75-10284 06
ARC-10559	B72-10277 03	ARC-10748	B73-10503 04	ARC-10919	B74-10222 04
ARC-10560	B72-10278 03	ARC-10749	B73-10507 04	ARC-10925	B75-10028 03
ARC-10562	B72-10272 02	ARC-10753	B74-10197 01	ARC-10927	B75-10029 09
ARC-10563	B72-10560 04			ARC-10928	B75-10030 05

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

ARC-10929	B75-10061 05	ERC-10404	B70-10461 03	GSFC-11004	B71-10502 02
ARC-10933	B75-10145 08	ERC-10463	B70-10269 03	GSFC-11013	B71-10025 01
ARC-10940	B75-10146 09	ERC-90017	B70-10472 03	GSFC-11023	B71-10444 02
ARC-10949	B75-10144 04	ERC-90051	B70-10449 06	GSFC-11028	B71-10412 07
ARC-10952	B75-10142 03	ERC-90066	B70-10376 01	GSFC-11046	B71-10410 02
ARC-10955	B75-10130 09	ERC-90076	B70-10047 02	GSFC-11050	B71-10313 01
ARC-10958	B75-10285 03			GSFC-11051	B72-10462 01
ARC-10960	B75-10143 09	FRC-10053	B75-10069 01	GSFC-11061	B72-10719 01
				GSFC-11077	B75-10085 06
				GSFC-11079	B74-10254 03
ARG-10060	B70-10061 03	GSFC-10008	B71-10073 08	GSFC-11082	B72-10388 03
ARG-10243	B70-10045 01	GSFC-10009	B71-10073 08	GSFC-11085	B71-10348 06
ARG-10249	B70-10240 03	GSFC-10010	B71-10073 08	GSFC-11086	B71-10286 01
ARG-10281	B70-10608 03	GSFC-10065	B70-10346 02	GSFC-11087	B72-10751 02
ARG-10354	B70-10142 01	GSFC-10072	B71-10198 04	GSFC-11092	B71-10051 05
ARG-10364	B70-10216 01	GSFC-10087	B74-10024 02	GSFC-11095	B74-10036 04
ARG-10412	B70-10233 04	GSFC-10097	B70-10521 01	GSFC-11133	B71-10236 03
ARG-10413	B71-10047 05	GSFC-10128	B70-10581 03	GSFC-11163	B71-10256 08
ARG-10446	B70-10177 04	GSFC-10159	B70-10011 04	GSFC-11169	B71-10055 04
ARG-10449	B71-10048 08	GSFC-10275	B70-10247 01	GSFC-11182	B74-10088 02
ARG-10487	B70-10036 03	GSFC-10276	B70-10247 01	GSFC-11188	B73-10488 03
ARG-90001	B71-10049 02	GSFC-10293	B70-10239 02	GSFC-11191	B71-10017 09
ARG-90033	B71-10050 08	GSFC-10299	B70-10485 02	GSFC-11200	B72-10472 03
ARG-90108	B70-10070 01	GSFC-10324	B70-10421 02	GSFC-11205	B73-10478 06
		GSFC-10361	B70-10600 04	GSFC-11214	B73-10403 04
		GSFC-10386	B71-10054 09	GSFC-11215	B73-10509 01
ERC-10010	B70-10440 01	GSFC-10441	B70-10345 01	GSFC-11216	B72-10396 04
ERC-10015	B74-10253 01	GSFC-10517	B71-10322 01	GSFC-11221	B71-10221 01
ERC-10032	B70-10492 01	GSFC-10525	B72-10471 02	GSFC-11237	B71-10324 02
ERC-10034	B70-10493 03	GSFC-10566	B72-10574 07	GSFC-11239	B72-10102 01
ERC-10065	B70-10478 02	GSFC-10661	B70-10278 01	GSFC-11244	B72-10387 03
ERC-10082	B70-10382 01	GSFC-10718	B70-10370 01	GSFC-11248	B71-10365 01
ERC-10088	B70-10075 01	GSFC-10721	B70-10211 02	GSFC-11253	B72-10129 04
ERC-10094	B70-10381 03	GSFC-10729	B70-10696 01	GSFC-11255	B72-10497 07
ERC-10098	B70-10464 02	GSFC-10730	B70-10696 01	GSFC-11256	B73-10285 02
ERC-10122	B70-10373 01	GSFC-10731	B70-10696 01	GSFC-11260	B71-10411 04
ERC-10125	B71-10142 01	GSFC-10735	B70-10005 01	GSFC-11262	B73-10122 02
ERC-10130	B70-10475 04	GSFC-10737	B71-10266 06	GSFC-11279	B71-10267 09
ERC-10139	B70-10494 01	GSFC-10750	B70-10025 01	GSFC-11283	B72-10132 03
ERC-10149	B70-10495 01	GSFC-10789	B70-10188 01	GSFC-11291	B73-10282 02
ERC-10187	B70-10480 02	GSFC-10790	B70-10181 01	GSFC-11302	B73-10332 06
ERC-10197	B70-10379 03	GSFC-10791	B73-10427 01	GSFC-11304	B72-10291 04
ERC-10211	B70-10372 01	GSFC-10792	B70-10153 01	GSFC-11305	B71-10294 09
ERC-10212	B70-10374 09	GSFC-10801	B70-10116 06	GSFC-11306	B71-10314 09
ERC-10213	B70-10380 01	GSFC-10820	B71-10056 02	GSFC-11308	B72-10620 09
ERC-10214	B74-10250 02	GSFC-10827	B70-10148 01	GSFC-11323	B72-10436 06
ERC-10217	B70-10454 01	GSFC-10831	B70-10641 02	GSFC-11340	B73-10334 02
ERC-10223	B70-10476 01	GSFC-10833	B70-10215 08	GSFC-11358	B72-10280 04
ERC-10227	B70-10377 02	GSFC-10835	B71-10375 08	GSFC-11367	B73-10519 01
ERC-10233	B70-10447 05	GSFC-10837	B70-10053 01	GSFC-11368	B73-10515 01
ERC-10237	B70-10378 01	GSFC-10855	B71-10110 03	GSFC-11377	B73-10126 02
ERC-10239	B70-10497 04	GSFC-10864	B71-10349 01	GSFC-11384	B71-10499 09
ERC-10248	B70-10507 02	GSFC-10878	B70-10250 01	GSFC-11387	B72-10289 06
ERC-10256	B70-10444 04	GSFC-10879	B73-10222 05	GSFC-11393	B71-10456 09
ERC-10262	B70-10446 09	GSFC-10886	B70-10266 01	GSFC-11394	B73-10185 01
ERC-10264	B70-10477 01	GSFC-10891	B70-10195 02	GSFC-11397	B72-10606 09
ERC-10266	B70-10460 01	GSFC-10894	B71-10345 01	GSFC-11403	B72-10440 03
ERC-10267	B74-10285 02	GSFC-10895	B71-10220 02	GSFC-11406	B73-10181 03
ERC-10271	B70-10481 02	GSFC-10901	B72-10647 02	GSFC-11408	B71-10500 09
ERC-10273	B70-10501 09	GSFC-10909	B72-10599 09	GSFC-11422	B71-10462 09
ERC-10277	B70-10445 03	GSFC-10910	B70-10424 07	GSFC-11425	B74-10026 01
ERC-10284	B70-10499 01	GSFC-10913	B72-10649 08	GSFC-11434	B73-10221 03
ERC-10285	B70-10457 02	GSFC-10928	B71-10033 01	GSFC-11444	B73-10129 02
ERC-10285	B74-10251 01	GSFC-10932	B71-10279 01	GSFC-11445	B72-10490 06
ERC-10290	B70-10383 01	GSFC-10943	B70-10462 01	GSFC-11446	B74-10255 01
ERC-10293	B70-10448 01	GSFC-10945	B71-10260 03	GSFC-11455	B73-10223 02
ERC-10301	B70-10473 03	GSFC-10949	B73-10333 01	GSFC-11466	B73-10052 02
ERC-10302	B70-10500 01	GSFC-10972	B71-10312 05	GSFC-11487	B73-10468 03
ERC-10303	B70-10474 01	GSFC-10975	B74-10021 02	GSFC-11492	B74-10229 03
ERC-10305	B70-10491 03	GSFC-10981	B71-10409 06	GSFC-11494	B71-10463 09
ERC-10306	B70-10479 02	GSFC-10982	B70-10643 01	GSFC-11499	B72-10600 09
ERC-10312	B70-10384 01	GSFC-10983	B70-10664 02	GSFC-11505	B72-10610 09
ERC-10313	B70-10385 01	GSFC-10990	B74-10035 02	GSFC-11509	B73-10175 03
ERC-10318	B70-10371 03	GSFC-10991	B71-10285 09	GSFC-11510	B73-10257 02
ERC-10336	B70-10436 05	GSFC-10993	B71-10346 01	GSFC-11512	B73-10162 09
ERC-10338	B74-10199 05	GSFC-10994	B71-10347 01	GSFC-11513	B73-10392 02
ERC-10365	B74-10252 06	GSFC-10995	B72-10113 03	GSFC-11515	B73-10162 09
ERC-10386	B70-10437 01			GSFC-11523	B72-10675 09

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

GSFC-11526	B72-10608 09	HQ-10152	B70-10074 01	HQ-10662	B72-10653 05
GSFC-11531	B73-10046 05	HQ-10159	B70-10274 06	HQ-10663	B72-10670 03
GSFC-11539	B72-10608 09	HQ-10167	B70-10113 03	HQ-10664	B72-10482 05
GSFC-11540	B73-10073 09	HQ-10179	B70-10254 05	HQ-10670	B71-10172 04
GSFC-11545	B72-10619 09	HQ-10213	B70-10168 03	HQ-10673	B73-10286 01
GSFC-11551	B74-10131 06	HQ-10215	B70-10098 02	HQ-10674	B72-10517 04
GSFC-11553	B74-10042 03	HQ-10230	B70-10024 01	HQ-10683	B72-10327 03
GSFC-11576	B72-10604 09	HQ-10242	B70-10083 04	HQ-10685	B72-10438 04
GSFC-11577	B73-10284 08	HQ-10253	B70-10169 02	HQ-10687	B72-10530 01
GSFC-11582	B73-10370 02	HQ-10266	B70-10054 04	HQ-10688	B72-10654 03
GSFC-11590	B73-10283 03	HQ-10267	B70-10205 04	HQ-10690	B72-10172 04
GSFC-11593	B73-10462 03	HQ-10268	B70-10004 04	HQ-10695	B72-10481 02
GSFC-11597	B72-10674 09	HQ-10269	B70-10294 04	HQ-10696	B72-10527 01
GSFC-11600	B73-10128 06	HQ-10270	B70-10201 05	HQ-10698	B72-10257 04
GSFC-11602	B73-10255 02	HQ-10271	B70-10094 04	HQ-10701	B72-10655 03
GSFC-11612	B72-10650 09	HQ-10302	B72-10651 06	HQ-10706	B72-10519 04
GSFC-11616	B74-10037 09	HQ-10306	B72-10458 09	HQ-10709	B72-10656 09
GSFC-11617	B75-10031 01	HQ-10317	B70-10069 02	HQ-10712	B72-10534 08
GSFC-11619	B73-10364 06	HQ-10326	B70-10263 02	HQ-10714	B72-10746 04
GSFC-11620	B73-10192 03	HQ-10332	B70-10260 03	HQ-10715	B72-10520 03
GSFC-11627	B74-10089 01	HQ-10347	B70-10271 03	HQ-10720	B72-10521 03
GSFC-11668	B75-10213 01	HQ-10358	B70-10141 01	HQ-10723	B72-10591 02
GSFC-11694	B74-10181 03	HQ-10359	B70-10064 01	HQ-10727	B72-10465 03
GSFC-11697	B73-10208 04	HQ-10371	B72-10495 03	HQ-10728	B73-10479 02
GSFC-11737	B73-10253 04	HQ-10373	B70-10138 02	HQ-10732	B74-10232 03
GSFC-11738	B73-10045 05	HQ-10379	B70-10246 02	HQ-10741	B72-10522 05
GSFC-11746	B74-10038 03	HQ-10382	B70-10276 01	HQ-10743	B72-10671 09
GSFC-11747	B75-10070 01	HQ-10389	B70-10108 03	HQ-10745	B72-10755 01
GSFC-11752	B74-10241 06	HQ-10407	B71-10075 01	HQ-10752	B72-10524 03
GSFC-11760	B74-10041 02	HQ-10426	B70-10556 09	HQ-10754	B72-10528 03
GSFC-11763	B74-10256 01	HQ-10434	B71-10057 02	HQ-10761	B72-10748 06
GSFC-11773	B73-10393 01	HQ-10435	B70-10650 01	HQ-10766	B72-10657 05
GSFC-11778	B75-10184 02	HQ-10442	B70-10295 07	HQ-10767	B72-10531 05
GSFC-11782	B74-10182 03	HQ-10446	B70-10167 03	HQ-10776	B72-10658 05
GSFC-11786	B73-10469 04	HQ-10450	B70-10206 04	HQ-10777	B72-10659 05
GSFC-11794	B73-10225 02	HQ-10452	B70-10021 01	HQ-10778	B72-10660 05
GSFC-11824	B75-10247 02	HQ-10453	B70-10021 01	HQ-10779	B72-10661 05
GSFC-11829	B74-10230 03	HQ-10454	B70-10084 04	HQ-10783	B72-10518 01
GSFC-11844	B75-10191 02	HQ-10477	B70-10057 01	HQ-10788	B72-10532 03
GSFC-11849	B74-10242 01	HQ-10486	B70-10433 06	HQ-10790	B72-10523 01
GSFC-11860	B73-10516 03	HQ-10488	B70-10022 01	HQ-10791	B74-10200 03
GSFC-11862	B74-10257 01	HQ-10497	B70-10003 01	HQ-10798	B72-10662 03
GSFC-11868	B75-10291 02	HQ-10498	B70-10137 03	HQ-10812	B73-10259 01
GSFC-11877	B74-10258 01	HQ-10499	B70-10426 03	HQ-10844	B75-10087 03
GSFC-11889	B74-10286 01	HQ-10502	B70-10616 02	HQ-10851	B75-10088 01
GSFC-11892	B74-10287 01	HQ-10508	B70-10072 07		
GSFC-11893	B75-10214 06	HQ-10520	B70-10293 06	JSC-12394	B73-10466 06
GSFC-11895	B75-10248 03	HQ-10522	B70-10058 04	JSC-12462	B73-10107 02
GSFC-11898	B75-10086 02	HQ-10534	B70-10200 01	JSC-12494	B73-10106 02
GSFC-11902	B75-10249 07	HQ-10536	B70-10059 01	JSC-12531	B73-10218 09
GSFC-11909	B74-10288 02	HQ-10537	B70-10145 01	JSC-12569	B73-10057 06
GSFC-11910	B75-10032 09	HQ-10541	B72-10389 03	JSC-12588	B73-10441 03
GSFC-11913	B75-10071 01	HQ-10545	B70-10147 02	JSC-12593	B73-10318 02
GSFC-11917	B74-10231 05	HQ-10546	B71-10026 03	JSC-12607	B73-10431 02
GSFC-11924	B75-10215 02	HQ-10547	B70-10082 01	JSC-13789	B73-10413 07
GSFC-11925	B75-10153 02	HQ-10548	B70-10157 01	JSC-13912	B73-10226 02
GSFC-11938	B75-10033 09	HQ-10550	B70-10434 02	JSC-14065	B73-10093 02
GSFC-11951	B75-10250 03	HQ-10552	B70-10441 03	JSC-14066	B73-10093 02
GSFC-11952	B75-10292 09	HQ-10563	B70-10032 02	JSC-14082	B73-10083 09
GSFC-11978	B75-10251 06	HQ-10564	B70-10032 02	JSC-14083	B73-10339 04
GSFC-12004	B75-10216 08	HQ-10565	B70-10035 01	JSC-14096	B73-10279 03
GSFC-12009	B75-10252 09	HQ-10574	B70-10574 04	JSC-14129	B73-10317 02
GSFC-12023	B75-10293 04	HQ-10577	B70-10262 01	JSC-14130	B73-10365 02
GSFC-12038	B75-10294 09	HQ-10579	B71-10211 09	JSC-14131	B73-10367 02
GSFC-12039	B75-10253 05	HQ-10580	B72-10529 04	JSC-14136	B73-10196 01
GSFC-12079	B75-10295 09	HQ-10582	B72-10526 05	JSC-14143	B73-10429 06
		HQ-10585	B70-10431 06	JSC-14149	B73-10092 05
		HQ-10591	B71-10197 04	JSC-14164	B73-10102 04
HQ-09000	B70-10001 05	HQ-10593	B70-10432 04	JSC-14166	B73-10102 04
HQ-09954	B70-10020 03	HQ-10594	B70-10687 01	JSC-14170	B73-10058 03
HQ-09955	B70-10020 03	HQ-10597	B71-10287 01	JSC-14180	B73-10236 02
HQ-09962	B70-10607 01	HQ-10609	B70-10692 07	JSC-14182	B73-10465 06
HQ-10041	B70-10111 03	HQ-10628	B72-10652 05	JSC-14219	B73-10173 02
HQ-10087	B70-10296 03	HQ-10635	B73-10368 01	JSC-14221	B73-10207 06
HQ-10112	B70-10222 04	HQ-10638	B71-10503 07	JSC-14222	B73-10261 02
HQ-10146	B70-10336 01	HQ-10645	B72-10516 03	JSC-14224	B73-10402 04
HQ-10147	B70-10097 01	HQ-10660	B72-10525 05		

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

JSC-14225	B73-10224 04	KSC-10517	B70-10349 04	LANGLEY-10320	B74-10259 01
JSC-14226	B73-10404 05	KSC-10518	B71-10364 03	LANGLEY-10358	B71-10035 01
JSC-14240	B73-10174 01	KSC-10519	B71-10018 07	LANGLEY-10385	B72-10611 03
JSC-14262	B73-10094 02	KSC-10520	B70-10350 06	LANGLEY-10387	B70-10023 02
JSC-14264	B73-10449 02	KSC-10521	B71-10169 02	LANGLEY-10397	B70-10620 03
JSC-14273	B73-10405 06	KSC-10522	B70-10680 03	LANGLEY-10423	B72-10473 04
JSC-14285	B73-10305 02	KSC-10526	B71-10001 02	LANGLEY-10426	B73-10047 07
JSC-14286	B73-10305 02	KSC-10537	B70-10553 01	LANGLEY-10443	B71-10061 04
JSC-14310	B73-10227 09	KSC-10546	B71-10246 02	LANGLEY-10444	B71-10035 01
JSC-14313	B73-10084 04	KSC-10550	B71-10280 08	LANGLEY-10452	B70-10223 03
JSC-14321	B73-10146 02	KSC-10555	B70-10543 07	LANGLEY-10486	B72-10374 08
JSC-14336	B73-10085 04	KSC-10557	B71-10380 01	LANGLEY-10488	B71-10076 08
JSC-14339	B73-10220 05	KSC-10562	B70-10488 01	LANGLEY-10503	B71-10029 01
JSC-14375	B73-10121 04	KSC-10565	B70-10700 01	LANGLEY-10511	B72-10548 02
JSC-14378	B73-10219 09	KSC-10573	B70-10560 01	LANGLEY-10514	B72-10230 04
JSC-14391	B73-10177 05	KSC-10574	B70-10561 09	LANGLEY-10515	B70-10611 03
JSC-14419	B73-10306 02	KSC-10577	B70-10529 05	LANGLEY-10535	B70-10520 04
JSC-14427	B73-10401 02	KSC-10589	B71-10404 02	LANGLEY-10539	B71-10126 02
JSC-14428	B73-10406 04	KSC-10615	B73-10110 07	LANGLEY-10543	B70-10103 07
JSC-14448	B73-10287 08	KSC-10618	B72-10636 06	LANGLEY-10576	B70-10532 09
JSC-14452	B73-10320 05	KSC-10619	B73-10053 09	LANGLEY-10590	B70-10249 01
JSC-14465	B73-10394 04	KSC-10639	B73-10190 07	LANGLEY-10607	B71-10076 08
JSC-14486	B73-10428 05	KSC-10644	B73-10280 02	LANGLEY-10610	B70-10662 02
JSC-14494	B73-10446 09	KSC-10654	B71-10391 02	LANGLEY-10614	B70-10298 01
JSC-14495	B73-10445 09	KSC-10661	B71-10258 02	LANGLEY-10618	B71-10475 05
JSC-14496	B73-10443 09	KSC-10662	B71-10272 03	LANGLEY-10619	B70-10656 03
JSC-14497	B73-10444 09	KSC-10668	B72-10578 01	LANGLEY-10620	B70-10639 02
JSC-14558	B73-10511 02	KSC-10698	B73-10178 02	LANGLEY-10623	B71-10334 01
JSC-14592	B73-10430 06	KSC-10699	B75-10254 02	LANGLEY-10626	B71-10002 09
JSC-17136	B73-10041 06	KSC-10702	B72-10295 02	LANGLEY-10627	B71-10335 03
JSC-17166	B73-10150 06	KSC-10704	B72-10376 01	LANGLEY-10630	B70-10578 04
JSC-17420	B73-10125 07	KSC-10707	B72-10536 07	LANGLEY-10658	B70-10619 05
JSC-17484	B73-10049 09	KSC-10708	B72-10509 07	LANGLEY-10660	B72-10328 04
JSC-17662	B73-10254 04	KSC-10721	B73-10483 04	LANGLEY-10667	B70-10710 06
JSC-17928	B73-10254 04	KSC-10723	B72-10541 02	LANGLEY-10674	B70-10525 05
JSC-17959	B73-10086 03	KSC-10728	B73-10043 02	LANGLEY-10675	B70-10660 09
JSC-19095	B73-10508 08	KSC-10730	B73-10176 03	LANGLEY-10676	B71-10505 08
JSC-19107	B73-10108 04	KSC-10731	B73-10074 02	LANGLEY-10679	B71-10052 09
JSC-19157	B73-10123 02	KSC-10736	B75-10154 02	LANGLEY-10681	B70-10724 01
JSC-19187	B73-10448 05	KSC-10750	B73-10189 02	LANGLEY-10684	B71-10127 08
JSC-19200	B73-10070 07	KSC-10754	B73-10067 09	LANGLEY-10705	B70-10235 04
JSC-19260	B73-10234 06	KSC-10766	B73-10149 04	LANGLEY-10711	B71-10336 08
JSC-19300	B73-10338 04	KSC-10768	B72-10685 07	LANGLEY-10712	B70-10716 02
		KSC-10769	B73-10337 02	LANGLEY-10738	B71-10342 04
		KSC-10770	B72-10433 07	LANGLEY-10740	B70-10725 06
		KSC-10782	B75-10192 02	LANGLEY-10742	B70-10629 01
KSC-10069	B70-10339 07	KSC-10793	B75-10255 01	LANGLEY-10743	B72-10356 08
KSC-10072	B70-10101 07	KSC-10812	B73-10510 02	LANGLEY-10755	B74-10289 05
KSC-10108	B73-10191 02	KSC-10817	B73-10366 01	LANGLEY-10756	B70-10712 06
KSC-10111	B70-10119 01	KSC-10819	B73-10418 09	LANGLEY-10776	B74-10201 04
KSC-10126	B73-10111 06	KSC-10821	B73-10426 02	LANGLEY-10778	B72-10744 08
KSC-10162	B71-10170 01	KSC-10833	B74-10183 05	LANGLEY-10779	B72-10455 01
KSC-10164	B70-10335 01	KSC-10837	B75-10155 09	LANGLEY-10782	B71-10247 08
KSC-10172	B70-10340 01	KSC-10850	B74-10039 07	LANGLEY-10789	B71-10493 07
KSC-10182	B73-10112 02	KSC-10851	B75-10296 02	LANGLEY-10795	B74-10132 04
KSC-10198	B73-10113 04	KSC-10855	B74-10028 06	LANGLEY-10800	B71-10337 06
KSC-10242	B73-10145 02	KSC-11005	B75-10193 04	LANGLEY-10801	B72-10375 03
KSC-10278	B70-10264 01	KSC-11006	B75-10297 02	LANGLEY-10804	B73-10048 05
KSC-10294	B70-10229 01			LANGLEY-10812	B73-10400 04
KSC-10300	B70-10149 01			LANGLEY-10814	B72-10339 04
KSC-10304	B72-10540 06	LANGLEY-10036	B70-10104 04	LANGLEY-10850	B72-10153 09
KSC-10315	B70-10063 09	LANGLEY-10102	B72-10641 05	LANGLEY-10885	B72-10153 09
KSC-10326	B73-10281 02	LANGLEY-10103	B70-10136 08	LANGLEY-10896	B72-10115 04
KSC-10373	B70-10484 09	LANGLEY-10125	B70-10342 08	LANGLEY-10927	B72-10002 04
KSC-10384	B71-10323 01	LANGLEY-10126	B70-10273 04	LANGLEY-10928	B73-10358 08
KSC-10385	B71-10288 02	LANGLEY-10151	B73-10238 04	LANGLEY-10930	B73-10416 07
KSC-10392	B70-10538 02	LANGLEY-10180	B70-10402 04	LANGLEY-10932	B73-10237 01
KSC-10394	B70-10515 01	LANGLEY-10184	B70-10728 07	LANGLEY-10935	B73-10425 02
KSC-10397	B70-10562 01	LANGLEY-10203	B72-10340 04	LANGLEY-10940	B74-10133 04
KSC-10399	B70-10102 03	LANGLEY-10221	B70-10403 04	LANGLEY-10941	B71-10535 09
KSC-10400	B70-10225 06	LANGLEY-10227	B70-10018 01	LANGLEY-10957	B72-10731 01
KSC-10470	B70-10320 07	LANGLEY-10255	B70-10115 02	LANGLEY-10962	B71-10501 09
KSC-10502	B70-10456 05	LANGLEY-10258	B71-10487 05	LANGLEY-10963	B72-10725 04
KSC-10504	B70-10289 07	LANGLEY-10268	B71-10009 04	LANGLEY-10970	
KSC-10508	B70-10071 03	LANGLEY-10292	B70-10711 03	LANGLEY-10976	
KSC-10513	B72-10283 07	LANGLEY-10299	B70-10404 04	LANGLEY-10989	
KSC-10514	B70-10502 07	LANGLEY-10311	B71-10343 03	LANGLEY-11012	
KSC-10515	B70-10582 06	LANGLEY-10312	B70-10695 06	LANGLEY-11013	
KSC-10516	B70-10583 07			LANGLEY-11027	

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

LANGLEY-11030	B73-10119 02	LANGLEY-11505	B74-10184 03	LEWIS-10124	B70-10554 02
LANGLEY-11045	B74-10134 03	LANGLEY-11523	B73-10463 07	LEWIS-10256	B71-10100 07
LANGLEY-11047	B72-10618 09	LANGLEY-11525	B73-10523 05	LEWIS-10286	B70-10312 07
LANGLEY-11048	B72-10067 09	LANGLEY-11526	B74-10185 08	LEWIS-10387	B70-10579 01
LANGLEY-11049	B72-10068 09	LANGLEY-11528	B74-10262 01	LEWIS-10436	B72-10514 04
LANGLEY-11053	B73-10447 04	LANGLEY-11533	B74-10204 09	LEWIS-10442	B70-10065 01
LANGLEY-11054	B72-10547 05	LANGLEY-11535	B74-10206 09	LEWIS-10482	B72-10253 09
LANGLEY-11056	B73-10424 04	LANGLEY-11536	B74-10234 01	LEWIS-10510	B70-10503 06
LANGLEY-11068	B72-10749 06	LANGLEY-11540	B75-10258 06	LEWIS-10515	B70-10185 04
LANGLEY-11069	B72-10395 05	LANGLEY-11543	B73-10433 07	LEWIS-10553	B70-10668 07
LANGLEY-11071	B72-10663 06	LANGLEY-11548	B73-10471 03	LEWIS-10679	B72-10444 09
LANGLEY-11072	B72-10683 08	LANGLEY-11561	B73-10464 06	LEWIS-10697	B70-10596 03
LANGLEY-11074	B72-10637 05	LANGLEY-11564	B73-10514 02	LEWIS-10698	B70-10429 08
LANGLEY-11092	B73-10075 03	LANGLEY-11565	B74-10093 02	LEWIS-10700	B70-10430 08
LANGLEY-11109	B72-10504 09	LANGLEY-11569	B74-10186 09	LEWIS-10788	B71-10392 09
LANGLEY-11112	B74-10260 01	LANGLEY-11570	B74-10138 06	LEWIS-10800	B72-10454 04
LANGLEY-11124	B72-10607 09	LANGLEY-11578	B75-10073 02	LEWIS-10814	B71-10388 03
LANGLEY-11125	B75-10217 02	LANGLEY-11579	B74-10140 05	LEWIS-10822	B70-10049 01
LANGLEY-11134	B73-10439 08	LANGLEY-11580	B74-10139 03	LEWIS-10856	B70-10468 07
LANGLEY-11138	B72-10533 05	LANGLEY-11581	B74-10207 09	LEWIS-10860	B70-10330 04
LANGLEY-11139	B72-10543 06	LANGLEY-11588	B74-10235 06	LEWIS-10861	B70-10300 04
LANGLEY-11141	B74-10261 03	LANGLEY-11589	B74-10263 08	LEWIS-10876	B70-10027 04
LANGLEY-11144	B73-10056 04	LANGLEY-11595	B74-10140 05	LEWIS-10886	B70-10043 01
LANGLEY-11152	B74-10202 03	LANGLEY-11596	B74-10236 09	LEWIS-10887	B70-10573 04
LANGLEY-11174	B74-10090 01	LANGLEY-11598	B74-10234 01	LEWIS-10889	B70-10459 01
LANGLEY-11175	B74-10091 06	LANGLEY-11601	B74-10141 08	LEWIS-10893	B71-10399 09
LANGLEY-11176	B73-10512 01	LANGLEY-11602	B75-10298 06	LEWIS-10894	B71-10508 09
LANGLEY-11177	B73-10322 09	LANGLEY-11604	B74-10031 07	LEWIS-10905	B71-10398 09
LANGLEY-11184	B73-10091 09	LANGLEY-11606	B74-10177 04	LEWIS-10926	B70-10174 01
LANGLEY-11197	B73-10362 09	LANGLEY-11607	B74-10178 02	LEWIS-10928	B70-10537 08
LANGLEY-11199	B74-10203 09	LANGLEY-11612	B74-10094 03	LEWIS-10933	B70-10183 04
LANGLEY-11202	B72-10066 07	LANGLEY-11617	B74-10142 02	LEWIS-10936	B70-10210 04
LANGLEY-11203	B74-10029 05	LANGLEY-11628	B74-10264 04	LEWIS-10939	B71-10074 06
LANGLEY-11204	B73-10442 01	LANGLEY-11638	B75-10218 02	LEWIS-10941	B72-10406 04
LANGLEY-11209	B74-10205 09	LANGLEY-11641	B74-10143 03	LEWIS-10949	B70-10557 09
LANGLEY-11210	B72-10741 01	LANGLEY-11643	B74-10179 06	LEWIS-10951	B70-10648 01
LANGLEY-11211	B73-10180 04	LANGLEY-11645	B74-10187 03	LEWIS-10954	B70-10002 02
LANGLEY-11213	B73-10361 02	LANGLEY-11647	B75-10156 02	LEWIS-10964	B70-10029 01
LANGLEY-11221	B73-10242 03	LANGLEY-11648	B74-10180 01	LEWIS-10965	B72-10456 04
LANGLEY-11224	B73-10438 08	LANGLEY-11649	B74-10188 05	LEWIS-10966	B70-10287 07
LANGLEY-11232	B74-10092 06	LANGLEY-11658	B74-10290 01	LEWIS-10969	B70-10151 01
LANGLEY-11249	B73-10184 06	LANGLEY-11661	B75-10089 08	LEWIS-10975	B70-10317 09
LANGLEY-11250	B73-10183 06	LANGLEY-11669	B75-10074 06	LEWIS-10977	B71-10402 09
LANGLEY-11258	B73-10042 06	LANGLEY-11675	B74-10208 04	LEWIS-10982	B72-10378 04
LANGLEY-11263	B73-10201 06	LANGLEY-11699	B74-10291 03	LEWIS-10983	B70-10175 04
LANGLEY-11266	B73-10193 07	LANGLEY-11704	B75-10219 01	LEWIS-10984	B70-10150 01
LANGLEY-11282	B73-10160 01	LANGLEY-11705	B75-10195 01	LEWIS-10985	B71-10359 04
LANGLEY-11284	B73-10179 01	LANGLEY-11707	B75-10196 01	LEWIS-10988	B71-10400 09
LANGLEY-11288	B74-10027 04	LANGLEY-11711	B75-10034 03	LEWIS-11001	B71-10407 06
LANGLEY-11305	B73-10470 06	LANGLEY-11728	B75-10197 01	LEWIS-11003	B70-10584 01
LANGLEY-11309	B73-10076 06	LANGLEY-11735	B75-10035 03	LEWIS-11007	B70-10099 03
LANGLEY-11312	B73-10513 02	LANGLEY-11750	B75-10090 03	LEWIS-11015	B72-10282 04
LANGLEY-11313	B74-10022 03	LANGLEY-11761	B75-10220 01	LEWIS-11017	B70-10080 04
LANGLEY-11324	B75-10194 09	LANGLEY-11765	B75-10221 01	LEWIS-11022	B70-10152 02
LANGLEY-11325	B74-10135 06	LANGLEY-11766	B75-10222 01	LEWIS-11026	B70-10331 08
LANGLEY-11326	B73-10241 05	LANGLEY-11768	B75-10223 03	LEWIS-11029	B70-10669 09
LANGLEY-11330	B75-10072 04	LANGLEY-11770	B75-10224 03	LEWIS-11035	B73-10001 07
LANGLEY-11338	B74-10136 03	LANGLEY-11771	B75-10157 04	LEWIS-11045	B70-10351 01
LANGLEY-11341	B73-10336 03	LANGLEY-11774	B75-10091 01	LEWIS-11046	B70-10588 04
LANGLEY-11351	B75-10256 03	LANGLEY-11781	B75-10158 03	LEWIS-11047	B72-10038 04
LANGLEY-11352	B73-10228 04	LANGLEY-11796	B75-10075 03	LEWIS-11051	B70-10332 02
LANGLEY-11353	B73-10436 05	LANGLEY-11799	B75-10159 04	LEWIS-11052	B70-10114 04
LANGLEY-11354	B73-10229 05	LANGLEY-11800	B75-10225 04	LEWIS-11056	B70-10504 04
LANGLEY-11358	B73-10321 02	LANGLEY-11801	B75-10226 03	LEWIS-11057	B70-10469 05
LANGLEY-11369	B73-10363 09	LANGLEY-11814	B75-10092 02	LEWIS-11060	B70-10361 04
LANGLEY-11372	B73-10319 04	LANGLEY-11815	B75-10259 06	LEWIS-11061	B70-10288 06
LANGLEY-11379	B74-10137 02	LANGLEY-11818	B75-10260 01	LEWIS-11063	B70-10362 07
LANGLEY-11382	B73-10359 05	LANGLEY-11825	B75-10300 06	LEWIS-11064	B70-10416 07
LANGLEY-11383	B73-10419 06	LANGLEY-11829	B75-10261 08	LEWIS-11065	B70-10706 08
LANGLEY-11387	B74-10176 02	LANGLEY-11830	B75-10262 03	LEWIS-11067	B70-10062 06
LANGLEY-11397	B75-10257 08	LANGLEY-11833	B75-10227 03	LEWIS-11068	B70-10470 01
LANGLEY-11399	B73-10240 06	LANGLEY-11834	B75-10263 09	LEWIS-11069	B72-10177 02
LANGLEY-11415	B73-10522 04	LANGLEY-11842	B75-10228 03	LEWIS-11072	B72-10515 04
LANGLEY-11433	B73-10414 06	LANGLEY-11883	B75-10160 03	LEWIS-11075	B70-10347 07
LANGLEY-11434	B73-10357 04	LANGLEY-11887	B75-10302 09	LEWIS-11076	B70-10343 07
LANGLEY-11435	B73-10420 03	LANGLEY-11894	B75-10303 05	LEWIS-11080	B70-10722 01
LANGLEY-11443	B74-10030 06	LANGLEY-11897	B75-10264 06	LEWIS-11082	B70-10322 07
LANGLEY-11503	B73-10437 04			LEWIS-11083	B70-10323 01

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

LEWIS-11085	B70-10580 08	LEWIS-11328	B71-10257 08	LEWIS-11657	B72-10397 04
LEWIS-11087	B74-10013 06	LEWIS-11329	B71-10118 03	LEWIS-11658	B72-10377 07
LEWIS-11094	B70-10352 06	LEWIS-11345	B72-10135 06	LEWIS-11661	B73-10258 08
LEWIS-11095	B72-10229 05	LEWIS-11346	B71-10373 09	LEWIS-11665	B72-10728 04
LEWIS-11096	B70-10563 03	LEWIS-11347	B71-10372 09	LEWIS-11672	B73-10124 07
LEWIS-11097	B72-10111 09	LEWIS-11349	B71-10321 09	LEWIS-11678	B72-10383 02
LEWIS-11103	B70-10471 03	LEWIS-11354	B72-10151 03	LEWIS-11679	B72-10584 09
LEWIS-11105	B70-10671 07	LEWIS-11364	B71-10394 04	LEWIS-11680	B72-10437 06
LEWIS-11109	B70-10569 01	LEWIS-11368	B72-10069 09	LEWIS-11690	B74-10001 06
LEWIS-11110	B72-10483 09	LEWIS-11374	B73-10205 06	LEWIS-11693	B72-10634 09
LEWIS-11111	B70-10552 01	LEWIS-11380	B72-10491 04	LEWIS-11698	B72-10737 01
LEWIS-11113	B70-10609 07	LEWIS-11382	B71-10153 09	LEWIS-11704	B73-10010 02
LEWIS-11116	B71-10397 06	LEWIS-11386	B75-10023 04	LEWIS-11705	B72-10489 06
LEWIS-11117	B70-10535 07	LEWIS-11387	B71-10455 08	LEWIS-11708	B72-10726 09
LEWIS-11129	B70-10670 03	LEWIS-11388	B71-10520 08	LEWIS-11714	B72-10718 09
LEWIS-11151	B70-10630 01	LEWIS-11395	B73-10040 08	LEWIS-11722	B72-10739 09
LEWIS-11152	B71-10173 07	LEWIS-11401	B72-10181 01	LEWIS-11724	B72-10359 08
LEWIS-11154	B70-10651 01	LEWIS-11403	B71-10490 09	LEWIS-11726	B73-10044 04
LEWIS-11155	B70-10689 01	LEWIS-11417	B72-10326 07	LEWIS-11735	B72-10164 01
LEWIS-11156	B70-10575 03	LEWIS-11438	B73-10012 09	LEWIS-11740	B72-10718 09
LEWIS-11159	B72-10227 03	LEWIS-11465	B72-10477 01	LEWIS-11741	B72-10593 08
LEWIS-11162	B71-10264 03	LEWIS-11466	B72-10183 06	LEWIS-11750	B72-10684 04
LEWIS-11167	B71-10403 04	LEWIS-11467	B72-10580 04	LEWIS-11751	B72-10632 05
LEWIS-11169	B73-10013 08	LEWIS-11469	B72-10379 03	LEWIS-11754	B72-10587 04
LEWIS-11170	B70-10678 03	LEWIS-11471	B72-10176 01	LEWIS-11755	B72-10630 05
LEWIS-11171	B70-10673 03	LEWIS-11473	B72-10150 04	LEWIS-11761	B72-10579 05
LEWIS-11172	B70-10677 03	LEWIS-11479	B72-10290 04	LEWIS-11775	B72-10716 06
LEWIS-11174	B70-10723 08	LEWIS-11483	B72-10136 04	LEWIS-11785	B72-10583 04
LEWIS-11175	B70-10498 01	LEWIS-11486	B72-10503 04	LEWIS-11790	B73-10068 04
LEWIS-11178	B71-10146 07	LEWIS-11487	B72-10145 01	LEWIS-11797	B73-10308 02
LEWIS-11190	B71-10155 09	LEWIS-11490	B74-10124 04	LEWIS-11802	B73-10003 08
LEWIS-11192	B72-10259 03	LEWIS-11493	B72-10225 09	LEWIS-11804	B72-10673 01
LEWIS-11193	B70-10652 07	LEWIS-11494	B72-10463 01	LEWIS-11807	B73-10072 08
LEWIS-11206	B71-10058 04	LEWIS-11495	B72-10144 04	LEWIS-11808	B72-10582 09
LEWIS-11208	B70-10628 03	LEWIS-11498	B72-10286 02	LEWIS-11809	B73-10244 09
LEWIS-11209	B70-10628 03	LEWIS-11499	B72-10403 06	LEWIS-11813	B72-10681 07
LEWIS-11210	B70-10672 04	LEWIS-11503	B72-10292 07	LEWIS-11814	B72-10686 06
LEWIS-11212	B71-10405 06	LEWIS-11509	B73-10002 04	LEWIS-11815	B73-10066 09
LEWIS-11217	B71-10098 07	LEWIS-11511	B71-10509 09	LEWIS-11816	B73-10307 09
LEWIS-11219	B71-10222 07	LEWIS-11512	B72-10434 07	LEWIS-11822	B73-10015 01
LEWIS-11220	B70-10618 04	LEWIS-11513	B72-10478 03	LEWIS-11823	B72-10627 04
LEWIS-11221	B71-10079 04	LEWIS-11514	B72-10288 08	LEWIS-11824	B72-10635 08
LEWIS-11222	B70-10634 04	LEWIS-11529	B72-10577 09	LEWIS-11826	B72-10715 06
LEWIS-11228	B70-10655 01	LEWIS-11533	B72-10130 03	LEWIS-11827	B74-10002 04
LEWIS-11228	B71-10179 01	LEWIS-11534	B72-10362 09	LEWIS-11828	B74-10003 04
LEWIS-11229	B71-10489 04	LEWIS-11535	B72-10331 06	LEWIS-11835	B72-10633 04
LEWIS-11230	B71-10099 04	LEWIS-11541	B73-10077 04	LEWIS-11840	B72-10717 04
LEWIS-11231	B71-10219 07	LEWIS-11549	B72-10480 01	LEWIS-11844	B73-10316 04
LEWIS-11233	B71-10080 07	LEWIS-11552	B72-10506 01	LEWIS-11849	B73-10004 01
LEWIS-11234	B72-10626 06	LEWIS-11553	B72-10513 08	LEWIS-11851	B72-10631 06
LEWIS-11235	B71-10406 03	LEWIS-11572	B72-10484 07	LEWIS-11852	B73-10005 08
LEWIS-11236	B71-10115 09	LEWIS-11573	B75-10006 08	LEWIS-11854	B73-10065 09
LEWIS-11237	B72-10405 09	LEWIS-11574	B72-10330 06	LEWIS-11859	B73-10246 09
LEWIS-11238	B71-10251 02	LEWIS-11581	B72-10512 05	LEWIS-11860	B73-10407 04
LEWIS-11239	B71-10212 08	LEWIS-11592	B72-10382 04	LEWIS-11863	B72-10753 09
LEWIS-11240	B71-10369 08	LEWIS-11593	B72-10178 07	LEWIS-11864	B72-10628 04
LEWIS-11241	B70-10635 07	LEWIS-11595	B72-10385 07	LEWIS-11866	B74-10063 03
LEWIS-11259	B72-10754 08	LEWIS-11598	B72-10114 07	LEWIS-11870	B73-10243 02
LEWIS-11260	B71-10268 08	LEWIS-11600	B74-10083 02	LEWIS-11872	B73-10006 02
LEWIS-11261	B71-10261 04	LEWIS-11602	B72-10672 07	LEWIS-11873	B74-10062 07
LEWIS-11262	B71-10199 08	LEWIS-11609	B72-10443 03	LEWIS-11878	B73-10214 09
LEWIS-11267	B72-10256 04	LEWIS-11610	B73-10206 03	LEWIS-11879	B73-10014 04
LEWIS-11268	B72-10745 08	LEWIS-11615	B72-10581 06	LEWIS-11893	B73-10027 03
LEWIS-11270	B72-10546 06	LEWIS-11617	B72-10727 03	LEWIS-11898	B72-10752 02
LEWIS-11274	B72-10447 07	LEWIS-11619	B72-10479 01	LEWIS-11903	B73-10011 02
LEWIS-11276	B71-10135 08	LEWIS-11632	B72-10629 03	LEWIS-11910	B74-10128 09
LEWIS-11280	B71-10223 02	LEWIS-11634	B72-10344 04	LEWIS-11918	B73-10200 06
LEWIS-11282	B71-10136 01	LEWIS-11635	B72-10586 09	LEWIS-11920	B74-10127 09
LEWIS-11283	B72-10537 07	LEWIS-11636	B72-10070 09	LEWIS-11924	B73-10007 04
LEWIS-11289	B71-10262 03	LEWIS-11638	B72-10137 04	LEWIS-11926	B73-10064 09
LEWIS-11290	B72-10133 06	LEWIS-11639	B72-10439 04	LEWIS-11930	B74-10016 04
LEWIS-11291	B71-10121 01	LEWIS-11642	B72-10384 07	LEWIS-11940	B73-10008 07
LEWIS-11293	B71-10374 09	LEWIS-11644	B74-10080 05	LEWIS-11941	B73-10195 02
LEWIS-11294	B71-10215 09	LEWIS-11647	B72-10511 04	LEWIS-11944	B73-10009 03
LEWIS-11297	B71-10393 04	LEWIS-11649	B72-10738 06	LEWIS-11953	B73-10172 04
LEWIS-11319	B71-10174 01	LEWIS-11651	B72-10585 09	LEWIS-11959	B73-10028 06
LEWIS-11323	B72-10175 04	LEWIS-11652	B72-10742 04	LEWIS-11961	B73-10247 09
LEWIS-11325	B71-10442 04	LEWIS-11655	B73-10415 07	LEWIS-11962	B73-10187 04
LEWIS-11327	B72-10134 01				

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

LEWIS-11963	B73-10188 04	LEWIS-12327	B74-10087 06	M-FS-13987	B70-10267 01
LEWIS-11964	B74-10004 02	LEWIS-12331	B74-10126 08	M-FS-14133	B72-10730 05
LEWIS-11971	B74-10065 03	LEWIS-12332	B74-10227 06	M-FS-14160	B70-10068 07
LEWIS-11984	B73-10063 04	LEWIS-12346	B74-10228 06	M-FS-14170	B70-10089 07
LEWIS-11985	B73-10039 04	LEWIS-12360	B75-10008 03	M-FS-14244	B70-10281 02
LEWIS-11995	B73-10230 06	LEWIS-12361	B75-10024 03	M-FS-14259	B70-10283 07
LEWIS-11996	B73-10248 09	LEWIS-12365	B75-10003 06	M-FS-14292	B70-10597 09
LEWIS-11997	B73-10231 09	LEWIS-12366	B75-10066 04	M-FS-14322	B70-10010 01
LEWIS-12007	B73-10213 04	LEWIS-12376	B75-10009 06	M-FS-14333	B70-10626 06
LEWIS-12008	B73-10309 09	LEWIS-12377	B75-10010 06	M-FS-14346	B70-10112 02
LEWIS-12009	B73-10171 01	LEWIS-12387	B75-10243 09	M-FS-14385	B70-10243 04
LEWIS-12010	B73-10232 09	LEWIS-12388	B75-10186 09	M-FS-14464	B70-10311 03
LEWIS-12011	B73-10245 09	LEWIS-12393	B75-10185 03	M-FS-14478	B72-10664 02
LEWIS-12019	B73-10233 09	LEWIS-12394	B74-10248 04	M-FS-14487	B70-10203 01
LEWIS-12020	B73-10249 01	LEWIS-12402	B75-10004 03	M-FS-14510	B70-10257 09
LEWIS-12034	B73-10250 07	LEWIS-12403	B75-10011 07	M-FS-14513	B70-10614 09
LEWIS-12041	B73-10310 04	LEWIS-12412	B75-10016 04	M-FS-14518	B70-10451 02
LEWIS-12042	B73-10311 08	LEWIS-12416	B75-10137 04	M-FS-14654	B71-10151 09
LEWIS-12044	B73-10408 02	LEWIS-12417	B75-10190 06	M-FS-14655	B70-10071 01
LEWIS-12054	B73-10312 03	LEWIS-12422	B75-10012 02	M-FS-14671	B71-10034 04
LEWIS-12055	B74-10060 03	LEWIS-12433	B75-10017 03	M-FS-14706	B71-10180 03
LEWIS-12056	B73-10409 03	LEWIS-12434	B75-10013 06	M-FS-14740	B70-10415 03
LEWIS-12057	B74-10005 04	LEWIS-12437	B75-10014 01	M-FS-14741	B72-10363 01
LEWIS-12058	B74-10066 03	LEWIS-12442	B75-10063 06	M-FS-14778	B71-10428 01
LEWIS-12059	B73-10410 02	LEWIS-12445	B75-10152 02	M-FS-14797	B70-10107 05
LEWIS-12064	B73-10313 02	LEWIS-12447	B75-10134 06	M-FS-14804	B71-10376 09
LEWIS-12065	B73-10251 03	LEWIS-12448	B75-10064 06	M-FS-14832	B70-10539 03
LEWIS-12072	B73-10314 04	LEWIS-12499	B75-10135 06	M-FS-14834	B70-10085 03
LEWIS-12073	B75-10007 04	LEWIS-12502	B75-10138 03	M-FS-14916	B71-10429 01
LEWIS-12075	B73-10315 04	LEWIS-12503	B75-10139 03	M-FS-14924	B71-10123 08
LEWIS-12077	B73-10252 03	LEWIS-12507	B75-10286 03	M-FS-14943	B70-10156 06
LEWIS-12083	B75-10001 03	LEWIS-12509	B75-10147 03	M-FS-14947	B71-10303 04
LEWIS-12085	B74-10020 07	LEWIS-12510	B75-10067 04	M-FS-14948	B70-10105 04
LEWIS-12087	B74-10018 08	LEWIS-12511	B75-10189 03	M-FS-14952	B72-10448 02
LEWIS-12089	B74-10081 03	LEWIS-12514	B75-10151 06	M-FS-14977	B70-10179 01
LEWIS-12094	B74-10017 04	LEWIS-12515	B75-10148 05	M-FS-15039	B70-10599 09
LEWIS-12096	B74-10006 01	LEWIS-12518	B75-10136 02	M-FS-15066	B71-10181 09
LEWIS-12102	B75-10149 03	LEWIS-12519	B75-10187 09	M-FS-15067	B70-10605 09
LEWIS-12109	B75-10068 02	LEWIS-12520	B75-10188 09	M-FS-15069	B70-10487 02
LEWIS-12110	B75-10015 09	LEWIS-12523	B75-10150 02	M-FS-15081	B70-10603 09
LEWIS-12118	B74-10247 04	LEWIS-12525	B75-10245 03	M-FS-15110	B70-10559 07
LEWIS-12128	B73-10411 02	LEWIS-12554	B75-10290 04	M-FS-15115	B70-10172 01
LEWIS-12129	B74-10130 09	LEWIS-12558	B75-10244 03	M-FS-15121	B70-10408 06
LEWIS-12138	B74-10007 04	LEWIS-12559	B75-10241 07	M-FS-15134	B71-10011 01
LEWIS-12139	B74-10008 07	LEWIS-12560	B75-10287 06	M-FS-15157	B71-10147 09
LEWIS-12140	B74-10009 07	LEWIS-12562	B75-10246 04	M-FS-15162	B71-10513 06
LEWIS-12152	B75-10018 09	LEWIS-12587	B75-10289 01	M-FS-15180	B70-10594 08
LEWIS-12153	B74-10084 09	LEWIS-12588	B75-10288 03	M-FS-15218	B72-10498 07
LEWIS-12154	B73-10412 07	LEWIS-12598	B75-10283 01	M-FS-16063	B70-10423 04
LEWIS-12159	B74-10121 04	LEWIS-90237	B70-10321 03	M-FS-16097	B72-10400 07
LEWIS-12168	B74-10010 07	LEWIS-90255	B71-10381 08	M-FS-16172	B70-10394 06
LEWIS-12169	B74-10011 04	LEWIS-90264	B70-10610 07	M-FS-16215	B70-10166 06
LEWIS-12178	B74-10129 09	LEWIS-90265	B70-10721 01	M-FS-16249	B70-10144 07
LEWIS-12179	B75-10242 09	LEWIS-90361	B70-10646 03	M-FS-16298	B70-10220 02
LEWIS-12184	B74-10125 08			M-FS-16319	B72-10688 07
LEWIS-12186	B74-10067 09			M-FS-16326	B72-10104 06
LEWIS-12204	B74-10014 07			M-FS-16444	B70-10207 07
LEWIS-12206	B74-10123 09	LRL-10011	B71-10192 05	M-FS-16570	B73-10078 05
LEWIS-12218	B74-10068 01	LRL-10024	B72-10312 03	M-FS-16597	B70-10555 09
LEWIS-12221	B74-10012 03	LRL-10025	B72-10475 07	M-FS-16609	B71-10213 02
LEWIS-12222	B74-10015 01	LRL-10026	B73-10194 04	M-FS-16648	B70-10219 01
LEWIS-12223	B74-10019 03	LRL-10028	B72-10500 03	M-FS-16658	B70-10483 01
LEWIS-12237	B74-10085 04	LRL-10031	B72-10314 03	M-FS-16695	B70-10189 03
LEWIS-12238	B74-10078 02	LRL-10032	B72-10345 07	M-FS-16709	B71-10193 01
LEWIS-12247	B75-10005 09	LRL-10033	B72-10343 04	M-FS-16725	B70-10044 08
LEWIS-12264	B74-10061 06	LRL-10034	B72-10311 09	M-FS-16730	B70-10455 07
LEWIS-12265	B74-10079 01	LRL-10050	B71-10122 09	M-FS-16750	B71-10150 06
LEWIS-12266	B74-10086 02			M-FS-16848	B72-10346 04
LEWIS-12267	B74-10064 01			M-FS-16863	B72-10678 07
LEWIS-12268	B74-10069 01	M-FS-01504	B70-10705 09	M-FS-16891	B71-10471 01
LEWIS-12269	B75-10022 06	M-FS-12078	B71-10224 02	M-FS-16927	B71-10237 07
LEWIS-12270	B74-10082 04	M-FS-12458	B70-10066 07	M-FS-18087	B70-10124 06
LEWIS-12272	B74-10122 04	M-FS-12613	B70-10522 02	M-FS-18115	B70-10122 03
LEWIS-12285	B75-10019 09	M-FS-13466	B70-10088 07	M-FS-18178	B72-10488 06
LEWIS-12286	B75-10020 09	M-FS-13568	B71-10354 08	M-FS-18401	B72-10105 06
LEWIS-12323	B75-10065 06	M-FS-13691	B70-10196 02	M-FS-18427	B70-10199 04
LEWIS-12324	B75-10002 09	M-FS-13754	B72-10103 01	M-FS-18495	B70-10409 07
LEWIS-12325	B75-10021 09	M-FS-13777	B71-10027 04	M-FS-18561	B70-10173 03
		M-FS-13823	B70-10194 08		

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

M-FS-18589	B70-10176 07	M-FS-20407	B72-10347 01	M-FS-20776	B71-10437 04
M-FS-18608	B70-10228 07	M-FS-20408	B70-10154 01	M-FS-20778	B70-10572 02
M-FS-18612	B70-10162 04	M-FS-20433	B70-10014 07	M-FS-20786	B71-10507 06
M-FS-18614	B70-10527 04	M-FS-20445	B70-10238 02	M-FS-20788	B70-10396 04
M-FS-18618	B70-10363 07	M-FS-20447	B70-10230 09	M-FS-20791	B70-10647 06
M-FS-18633	B70-10081 04	M-FS-20449	B70-10299 03	M-FS-20793	B70-10397 08
M-FS-18649	B70-10571 04	M-FS-20458	B71-10310 04	M-FS-20799	B70-10388 06
M-FS-18659	B70-10146 04	M-FS-20470	B71-10015 03	M-FS-20802	B70-10389 07
M-FS-18677	B70-10325 03	M-FS-20476	B71-10016 01	M-FS-20803	B70-10627 06
M-FS-18690	B70-10586 07	M-FS-20486	B71-10077 04	M-FS-20805	B70-10390 07
M-FS-18693	B71-10309 01	M-FS-20491	B70-10309 06	M-FS-20806	B70-10417 08
M-FS-18696	B70-10259 04	M-FS-20503	B70-10093 06	M-FS-20812	B70-10348 07
M-FS-18705	B70-10121 08	M-FS-20507	B70-10422 02	M-FS-20814	B72-10140 03
M-FS-18711	B71-10012 07	M-FS-20508	B70-10368 07	M-FS-20816	B70-10690 03
M-FS-18712	B70-10092 04	M-FS-20509	B70-10256 03	M-FS-20819	B70-10391 07
M-FS-18713	B70-10227 06	M-FS-20522	B71-10183 06	M-FS-20823	B70-10654 08
M-FS-18737	B70-10589 07	M-FS-20534	B71-10297 04	M-FS-20824	B70-10514 08
M-FS-18753	B70-10364 04	M-FS-20536	B71-10186 09	M-FS-20826	B71-10140 07
M-FS-18754	B70-10667 03	M-FS-20541	B71-10205 02	M-FS-20827	B70-10418 07
M-FS-18774	B71-10020 07	M-FS-20542	B71-10269 03	M-FS-20830	B70-10595 07
M-FS-18775	B70-10261 04	M-FS-20543	B70-10106 03	M-FS-20835	B72-10402 05
M-FS-18789	B70-10120 08	M-FS-20544	B70-10241 08	M-FS-20837	B70-10661 04
M-FS-18790	B70-10213 04	M-FS-20546	B71-10439 02	M-FS-20839	B72-10139 02
M-FS-18793	B71-10430 06	M-FS-20554	B70-10681 03	M-FS-20842	B71-10062 08
M-FS-18794	B70-10506 04	M-FS-20556	B70-10598 06	M-FS-20843	B70-10514 08
M-FS-18804	B70-10365 01	M-FS-20558	B70-10505 01	M-FS-20848	B72-10342 04
M-FS-18808	B71-10228 02	M-FS-20559	B70-10369 04	M-FS-20849	B71-10226 02
M-FS-18813	B70-10701 07	M-FS-20560	B70-10015 08	M-FS-20850	B71-10271 06
M-FS-18815	B70-10366 04	M-FS-20561	B70-10012 06	M-FS-20852	B71-10239 07
M-FS-18817	B71-10436 03	M-FS-20564	B71-10270 06	M-FS-20857	B71-10360 02
M-FS-18821	B70-10367 08	M-FS-20576	B70-10285 04	M-FS-20860	B71-10072 07
M-FS-18822	B70-10715 06	M-FS-20583	B70-10143 02	M-FS-20861	B71-10216 04
M-FS-18831	B71-10225 04	M-FS-20587	B71-10366 02	M-FS-20874	B71-10240 09
M-FS-18844	B70-10645 04	M-FS-20589	B71-10383 03	M-FS-20876	B70-10663 08
M-FS-18845	B70-10645 04	M-FS-20600	B71-10238 09	M-FS-20883	B71-10300 04
M-FS-18859	B72-10614 09	M-FS-20610	B70-10109 01	M-FS-20891	B71-10275 01
M-FS-18867	B71-10435 08	M-FS-20613	B71-10031 03	M-FS-20892	B72-10336 04
M-FS-18921	B71-10013 01	M-FS-20615	B70-10191 01	M-FS-20895	B71-10254 06
M-FS-19004	B72-10407 06	M-FS-20627	B70-10135 03	M-FS-20902	B71-10274 01
M-FS-19040	B71-10377 09	M-FS-20630	B70-10324 03	M-FS-20908	B70-10714 07
M-FS-19113	B72-10394 08	M-FS-20634	B70-10386 04	M-FS-20909	B71-10253 08
M-FS-19196	B73-10158 03	M-FS-20635	B70-10558 07	M-FS-20915	B72-10106 01
M-FS-19218	B73-10440 03	M-FS-20638	B70-10649 03	M-FS-20916	B71-10023 07
M-FS-19234	B74-10265 04	M-FS-20639	B70-10315 03	M-FS-20925	B71-10356 04
M-FS-20005	B71-10059 05	M-FS-20640	B70-10125 05	M-FS-20933	B72-10156 01
M-FS-20015	B70-10314 01	M-FS-20642	B71-10252 03	M-FS-20936	B73-10109 01
M-FS-20016	B70-10314 01	M-FS-20645	B70-10193 07	M-FS-20941	B72-10152 03
M-FS-20074	B72-10260 03	M-FS-20658	B72-10442 02	M-FS-20943	B71-10206 08
M-FS-20111	B72-10575 07	M-FS-20663	B70-10050 07	M-FS-20946	B71-10245 04
M-FS-20112	B71-10457 08	M-FS-20667	B70-10140 04	M-FS-20948	B71-10299 02
M-FS-20113	B71-10458 08	M-FS-20675	B70-10658 03	M-FS-20950	B71-10298 02
M-FS-20114	B71-10459 08	M-FS-20684	B70-10126 07	M-FS-20952	B71-10299 02
M-FS-20115	B71-10460 08	M-FS-20686	B70-10665 03	M-FS-20955	B72-10399 06
M-FS-20116	B71-10422 08	M-FS-20687	B70-10123 01	M-FS-20962	B71-10357 03
M-FS-20117	B71-10461 08	M-FS-20688	B71-10368 01	M-FS-20971	B71-10350 03
M-FS-20118	B71-10464 08	M-FS-20692	B72-10348 07	M-FS-20979	B72-10342 04
M-FS-20119	B71-10465 08	M-FS-20698	B70-10513 08	M-FS-20984	B72-10333 04
M-FS-20120	B71-10060 08	M-FS-20701	B70-10341 03	M-FS-20994	B72-10450 05
M-FS-20121	B71-10415 08	M-FS-20711	B72-10313 04	M-FS-21009	B71-10379 01
M-FS-20122	B70-10719 08	M-FS-20714	B70-10127 08	M-FS-21010	B71-10241 05
M-FS-20123	B71-10417 08	M-FS-20715	B70-10155 08	M-FS-21024	B71-10351 03
M-FS-20128	B71-10418 08	M-FS-20717	B71-10273 03	M-FS-21039	B72-10342 04
M-FS-20137	B71-10355 05	M-FS-20723	B71-10438 01	M-FS-21044	B71-10107 05
M-FS-20142	B71-10419 08	M-FS-20725	B70-10577 07	M-FS-21045	B71-10107 05
M-FS-20162	B71-10434 04	M-FS-20726	B70-10291 07	M-FS-21046	B71-10107 05
M-FS-20164	B70-10184 09	M-FS-20730	B70-10411 06	M-FS-21047	B71-10024 05
M-FS-20205	B72-10640 07	M-FS-20734	B71-10148 02	M-FS-21049	B71-10032 01
M-FS-20213	B72-10154 03	M-FS-20736	B70-10659 03	M-FS-21050	B71-10352 03
M-FS-20234	B71-10416 08	M-FS-20744	B72-10648 09	M-FS-21070	B72-10361 02
M-FS-20236	B71-10421 08	M-FS-20748	B71-10021 01	M-FS-21074	B71-10353 03
M-FS-20237	B71-10420 08	M-FS-20749	B71-10022 03	M-FS-21075	B71-10106 09
M-FS-20257	B71-10014 01	M-FS-20750	B71-10214 07	M-FS-21077	B71-10482 04
M-FS-20266	B70-10265 09	M-FS-20753	B70-10412 08	M-FS-21080	B71-10218 02
M-FS-20272	B70-10316 04	M-FS-20756	B70-10313 07	M-FS-21087	B73-10421 03
M-FS-20284	B73-10477 05	M-FS-20757	B70-10387 01	M-FS-21096	B71-10242 01
M-FS-20324	B71-10019 02	M-FS-20764	B70-10301 06	M-FS-21111	B71-10358 07
M-FS-20349	B70-10255 05	M-FS-20770	B71-10003 09	M-FS-21113	B72-10321 04
M-FS-20402	B71-10182 01	M-FS-20773	B70-10395 06	M-FS-21114	B75-10198 04

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

M-FS-21119	871-10111 03	M-FS-21488	872-10355 07	M-FS-21932	872-10596 04
M-FS-21121	871-10486 01	M-FS-21490	871-10491 09	M-FS-21955	872-10621 09
M-FS-21126	871-10217 04	M-FS-21495	872-10264 07	M-FS-21964	872-10393 01
M-FS-21128	872-10350 09	M-FS-21498	872-10158 06	M-FS-21965	872-10622 09
M-FS-21129	872-10360 03	M-FS-21513	872-10287 07	M-FS-21970	873-10115 09
M-FS-21131	871-10433 08	M-FS-21531	872-10265 09	M-FS-21973	873-10101 09
M-FS-21133	873-10152 01	M-FS-21537	872-10142 09	M-FS-21991	872-10624 09
M-FS-21138	871-10207 07	M-FS-21539	872-10493 04	M-FS-22003	872-10638 08
M-FS-21139	871-10152 07	M-FS-21553	872-10254 02	M-FS-22012	872-10499 07
M-FS-21160	871-10208 04	M-FS-21556	872-10325 07	M-FS-22016	873-10059 06
M-FS-21161	871-10209 04	M-FS-21558	872-10644 08	M-FS-22022	873-10204 07
M-FS-21165	872-10409 02	M-FS-21560	872-10187 04	M-FS-22024	872-10468 02
M-FS-21166	871-10227 06	M-FS-21567	872-10323 06	M-FS-22039	874-10144 06
M-FS-21169	871-10078 04	M-FS-21571	872-10386 04	M-FS-22043	872-10680 02
M-FS-21212	872-10665 03	M-FS-21573	872-10617 05	M-FS-22044	872-10697 01
M-FS-21224	871-10168 08	M-FS-21575	872-10324 03	M-FS-22054	873-10090 04
M-FS-21225	871-10232 03	M-FS-21576	872-10467 02	M-FS-22062	872-10720 03
M-FS-21227	871-10382 09	M-FS-21584	873-10235 02	M-FS-22064	872-10464 04
M-FS-21232	872-10358 04	M-FS-21593	872-10485 03	M-FS-22067	873-10118 02
M-FS-21233	872-10594 04	M-FS-21597	872-10408 06	M-FS-22088	873-10525 02
M-FS-21236	871-10124 05	M-FS-21606	872-10457 08	M-FS-22090	872-10474 01
M-FS-21237	871-10384 09	M-FS-21609	872-10131 02	M-FS-22092	872-10460 03
M-FS-21244	873-10210 03	M-FS-21610	871-10423 09	M-FS-22117	872-10668 02
M-FS-21246	872-10107 03	M-FS-21611	871-10485 05	M-FS-22118	872-10646 01
M-FS-21247	871-10385 03	M-FS-21612	872-10322 07	M-FS-22119	872-10469 04
M-FS-21251	871-10338 08	M-FS-21613	872-10147 03	M-FS-22123	873-10169 02
M-FS-21262	872-10598 06	M-FS-21614	872-10410 09	M-FS-22125	873-10069 04
M-FS-21266	872-10592 04	M-FS-21616	873-10331 02	M-FS-22126	873-10104 09
M-FS-21267	872-10320 04	M-FS-21618	872-10466 06	M-FS-22133	873-10098 07
M-FS-21268	871-10432 03	M-FS-21626	872-10149 01	M-FS-22135	873-10170 02
M-FS-21277	872-10112 01	M-FS-21627	871-10492 09	M-FS-22159	873-10089 05
M-FS-21288	872-10157 04	M-FS-21628	873-10524 06	M-FS-22168	873-10061 06
M-FS-21289	872-10141 02	M-FS-21630	872-10612 04	M-FS-22223	874-10032 04
M-FS-21290	871-10530 02	M-FS-21637	872-10143 03	M-FS-22264	872-10696 01
M-FS-21291	872-10108 02	M-FS-21650	872-10459 07	M-FS-22266	873-10216 07
M-FS-21310	873-10054 01	M-FS-21652	872-10486 09	M-FS-22279	873-10116 03
M-FS-21317	873-10475 04	M-FS-21660	873-10127 02	M-FS-22280	872-10740 06
M-FS-21318	873-10489 07	M-FS-21664	872-10535 02	M-FS-22295	873-10256 09
M-FS-21319	873-10489 07	M-FS-21668	872-10266 04	M-FS-22296	873-10202 02
M-FS-21325	872-10262 04	M-FS-21671	872-10682 02	M-FS-22322	873-10526 09
M-FS-21326	872-10109 02	M-FS-21674	872-10666 04	M-FS-22324	873-10215 04
M-FS-21328	873-10071 04	M-FS-21675	872-10352 07	M-FS-22325	873-10079 04
M-FS-21333	871-10296 09	M-FS-21691	872-10294 04	M-FS-22326	873-10062 04
M-FS-21344	872-10392 02	M-FS-21692	873-10050 03	M-FS-22333	873-10260 04
M-FS-21345	871-10378 03	M-FS-21693	872-10357 02	M-FS-22342	873-10159 02
M-FS-21350	871-10156 06	M-FS-21701	875-10199 06	M-FS-22343	873-10217 02
M-FS-21354	871-10363 08	M-FS-21704	872-10351 03	M-FS-22348	873-10095 03
M-FS-21357	871-10344 02	M-FS-21711	872-10267 09	M-FS-22350	873-10051 02
M-FS-21361	872-10597 07	M-FS-21716	872-10404 07	M-FS-22353	873-10147 04
M-FS-21363	871-10339 04	M-FS-21720	872-10639 02	M-FS-22354	873-10103 04
M-FS-21364	871-10340 03	M-FS-21724	872-10317 03	M-FS-22355	873-10080 04
M-FS-21374	872-10329 07	M-FS-21727	873-10117 06	M-FS-22377	873-10096 01
M-FS-21377	872-10110 07	M-FS-21728	873-10335 07	M-FS-22401	874-10225 09
M-FS-21384	873-10153 04	M-FS-21731	872-10687 07	M-FS-22403	873-10099 05
M-FS-21386	871-10424 09	M-FS-21735	872-10470 07	M-FS-22426	873-10199 01
M-FS-21387	871-10488 04	M-FS-21742	872-10354 03	M-FS-22434	873-10399 03
M-FS-21393	871-10483 04	M-FS-21751	872-10667 09	M-FS-22438	873-10081 04
M-FS-21396	873-10328 04	M-FS-21761	873-10203 07	M-FS-22458	873-10374 01
M-FS-21397	873-10060 04	M-FS-21774	872-10603 06	M-FS-22470	873-10082 08
M-FS-21399	873-10151 04	M-FS-21775	873-10105 03	M-FS-22493	873-10055 01
M-FS-21401	871-10361 01	M-FS-21788	872-10576 06	M-FS-22505	873-10197 02
M-FS-21406	874-10040 09	M-FS-21791	873-10100 02	M-FS-22511	873-10211 01
M-FS-21410	872-10318 04	M-FS-21822	872-10645 07	M-FS-22517	873-10434 03
M-FS-21414	872-10601 09	M-FS-21831	872-10589 09	M-FS-22532	873-10166 09
M-FS-21415	871-10466 05	M-FS-21846	872-10669 06	M-FS-22536	874-10043 09
M-FS-21416	872-10263 03	M-FS-21847	872-10613 06	M-FS-22537	873-10435 03
M-FS-21423	871-10484 03	M-FS-21848	872-10380 06	M-FS-22540	873-10168 04
M-FS-21424	871-10519 03	M-FS-21877	872-10494 06	M-FS-22541	873-10472 07
M-FS-21432	871-10441 09	M-FS-21880	872-10676 09	M-FS-22542	873-10473 07
M-FS-21433	873-10161 02	M-FS-21883	872-10588 05	M-FS-22546	873-10323 02
M-FS-21435	871-10467 08	M-FS-21911	872-10689 06	M-FS-22547	873-10182 03
M-FS-21441	872-10487 03	M-FS-21915	872-10643 01	M-FS-22562	873-10527 04
M-FS-21448	872-10595 08	M-FS-21916	872-10353 04	M-FS-22563	873-10156 05
M-FS-21453	871-10531 08	M-FS-21924	872-10316 01	M-FS-22565	873-10155 03
M-FS-21466	872-10602 09	M-FS-21926	872-10698 05	M-FS-22566	873-10167 02
M-FS-21469	872-10319 07	M-FS-21927	872-10615 06	M-FS-22589	875-10161 02
M-FS-21477	871-10431 09	M-FS-21928	872-10293 08	M-FS-22590	873-10330 03
M-FS-21486	872-10505 01	M-FS-21930	872-10476 06	M-FS-22591	873-10330 03

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

M-FS-22601	873-10157 02	M-FS-23251	875-10307 03	MSC-12661	874-10239 01
M-FS-22627	873-10198 05	M-FS-23257	875-10231 04	MSC-12663	875-10079 05
M-FS-22638	873-10329 07	M-FS-23260	875-10165 06	MSC-12677	875-10105 03
M-FS-22672	873-10432 09	M-FS-23261	875-10232 03	MSC-12710	875-10269 05
M-FS-22678	873-10518 06	M-FS-23268	875-10268 03	MSC-12721	875-10316 02
M-FS-22686	873-10395 06	M-FS-23272	875-10301 08	MSC-13036	872-10334 05
M-FS-22691	873-10326 06	M-FS-23275	875-10308 04	MSC-13139	870-10623 06
M-FS-22693	873-10327 02	M-FS-23298	875-10309 08	MSC-13174	870-10277 01
M-FS-22697	874-10145 09	M-FS-23306	875-10310 04	MSC-13176	870-10602 09
M-FS-22708	874-10033 09	M-FS-23310	875-10311 03	MSC-13222	870-10031 03
M-FS-22713	873-10371 04	M-FS-23327	875-10312 01	MSC-13227	871-10329 05
M-FS-22720	873-10369 07	M-FS-23329	875-10313 06	MSC-13234	870-10438 03
M-FS-22724	873-10422 03	M-FS-24006	871-10341 01	MSC-13262	871-10067 07
M-FS-22728	874-10044 09	M-FS-24010	872-10401 04	MSC-13275	870-10570 01
M-FS-22741	873-10417 03	M-FS-24015	871-10194 06	MSC-13282	870-10110 02
M-FS-22743	873-10484 06	M-FS-24017	871-10195 04	MSC-13332	871-10536 03
M-FS-22744	873-10485 06	M-FS-24020	871-10196 06	MSC-13358	870-10218 01
M-FS-22768	873-10423 03	M-FS-24073	871-10473 09	MSC-13377	870-10442 03
M-FS-22793	873-10396 04	M-FS-24109	872-10381 06	MSC-13385	870-10326 01
M-FS-22796	873-10372 04	M-FS-24119	872-10441 06	MSC-13387	870-10642 09
M-FS-22797	873-10397 04	M-FS-24167	873-10209 03	MSC-13407	870-10030 05
M-FS-22798	873-10373 04	M-FS-24171	873-10163 03	MSC-13408	870-10087 07
M-FS-22807	874-10146 06	M-FS-24172	873-10186 09	MSC-13409	870-10258 04
M-FS-22833	873-10474 05	M-FS-24221	872-10679 06	MSC-13410	870-10258 04
M-FS-22835	873-10486 02	M-FS-24242	873-10154 02	MSC-13411	870-10258 04
M-FS-22838	875-10093 09	M-FS-24271	873-10097 01	MSC-13425	870-10541 01
M-FS-22848	874-10076 06	M-FS-24307	873-10148 04	MSC-13428	870-10617 02
M-FS-22873	874-10189 09	M-FS-24324	873-10120 09	MSC-13430	870-10653 07
M-FS-22887	874-10147 02	M-FS-24325	874-10151 06	MSC-13432	870-10546 04
M-FS-22896	873-10528 08	M-FS-24402	873-10212 03	MSC-13433	870-10037 07
M-FS-22898	873-10487 02	M-FS-24424	873-10325 06	MSC-13436	870-10528 05
M-FS-22899	874-10148 07	M-FS-24445	873-10398 06	MSC-13437	870-10165 07
M-FS-22909	873-10480 02	M-FS-24464	873-10324 07	MSC-13441	870-10640 07
M-FS-22910	874-10190 09	M-FS-24470	873-10476 01	MSC-13443	870-10622 03
M-FS-22918	873-10481 04	M-FS-24475	873-10482 03	MSC-13450	870-10319 03
M-FS-22935	874-10034 09			MSC-13451	871-10083 07
M-FS-22943	874-10149 03	MSC-10170	875-10170 05	MSC-13460	870-10536 03
M-FS-23026	874-10150 02	MSC-11325	870-10302 07	MSC-13475	871-10295 09
M-FS-23027	875-10094 09	MSC-11653	872-10721 09	MSC-13476	871-10066 03
M-FS-23047	874-10237 07	MSC-11773	870-10190 01	MSC-13489	870-10117 01
M-FS-23057	874-10266 07	MSC-12109	870-10544 08	MSC-13492	870-10305 01
M-FS-23059	874-10267 06	MSC-12121	871-10081 07	MSC-13493	870-10427 06
M-FS-23062	874-10292 07	MSC-12165	871-10091 02	MSC-13497	871-10084 01
M-FS-23074	874-10226 05	MSC-12205	870-10095 02	MSC-13499	872-10337 04
M-FS-23083	875-10036 01	MSC-12209	870-10482 01	MSC-13506	871-10085 03
M-FS-23086	874-10238 06	MSC-12223	870-10180 01	MSC-13507	871-10065 03
M-FS-23090	874-10268 04	MSC-12237	870-10413 03	MSC-13508	871-10522 07
M-FS-23100	875-10037 02	MSC-12282	872-10332 07	MSC-13512	870-10465 07
M-FS-23101	875-10076 04	MSC-12295	870-10268 03	MSC-13515	871-10514 06
M-FS-23107	874-10293 03	MSC-12305	871-10137 05	MSC-13516	871-10514 06
M-FS-23133	874-10294 01	MSC-12318	870-10290 02	MSC-13517	871-10514 06
M-FS-23134	875-10038 04	MSC-12320	870-10545 05	MSC-13530	871-10149 04
M-FS-23140	875-10095 06	MSC-12327	870-10303 01	MSC-13539	871-10086 09
M-FS-23143	875-10077 05	MSC-12335	870-10304 01	MSC-13540	871-10259 04
M-FS-23147	875-10039 01	MSC-12363	871-10494 03	MSC-13542	871-10087 02
M-FS-23151	875-10078 07	MSC-12386	871-10068 03	MSC-13543	871-10330 05
M-FS-23157	875-10096 01	MSC-12388	871-10082 02	MSC-13544	871-10330 05
M-FS-23159	875-10304 01	MSC-12393	871-10167 05	MSC-13554	870-10489 08
M-FS-23163	875-10097 03	MSC-12395	872-10729 01	MSC-13557	870-10621 04
M-FS-23167	875-10098 03	MSC-12398	871-10092 05	MSC-13571	870-10540 04
M-FS-23169	875-10305 03	MSC-12404	871-10325 02	MSC-13572	870-10540 04
M-FS-23170	875-10099 03	MSC-12417	871-10450 01	MSC-13573	871-10387 05
M-FS-23172	875-10100 09	MSC-12419	871-10301 07	MSC-13586	870-10644 04
M-FS-23173	875-10161 02	MSC-12427	871-10302 07	MSC-13587	870-10688 07
M-FS-23184	875-10101 01	MSC-12428	871-10276 02	MSC-13604	872-10031 05
M-FS-23188	875-10229 03	MSC-12432	871-10511 07	MSC-13609	872-10032 05
M-FS-23193	875-10102 01	MSC-12447	871-10316 05	MSC-13613	871-10506 03
M-FS-23195	875-10162 02	MSC-12458	872-10030 02	MSC-13625	870-10698 09
M-FS-23200	875-10265 02	MSC-12548	872-10496 06	MSC-13637	870-10684 01
M-FS-23216	875-10103 02	MSC-12564	875-10166 05	MSC-13639	871-10088 01
M-FS-23218	875-10163 04	MSC-12568	875-10339 04	MSC-13648	872-10642 05
M-FS-23228	875-10164 08	MSC-12600	875-10314 04	MSC-13653	870-10697 05
M-FS-23229	875-10164 08	MSC-12615	874-10269 07	MSC-13686	871-10089 01
M-FS-23234	875-10266 03	MSC-12616	874-10223 03	MSC-13695	871-10331 04
M-FS-23237	875-10267 08	MSC-12619	875-10104 04	MSC-13697	871-10304 01
M-FS-23238	875-10230 01	MSC-12631	874-10270 08	MSC-13700	872-10216 07
M-FS-23239	875-10200 04	MSC-12640	875-10315 03	MSC-13728	871-10090 02
M-FS-23242	875-10306 01			MSC-13729	871-10141 02

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

MSC-13732	B71-10317 04	MSC-14793	B75-10272 03	MSC-19391	B75-10172 09
MSC-13733	B71-10277 04	MSC-14802	B75-10273 09	MSC-19399	B74-10192 01
MSC-13746	B71-10263 02	MSC-14810	B75-10171 01	MSC-19401	B74-10193 06
MSC-13805	B72-10736 09	MSC-14822	B75-10274 01	MSC-19428	B75-10234 06
MSC-13814	B72-10411 02	MSC-14823	B75-10235 03	MSC-19442	B74-10224 03
MSC-13816	B72-10033 03	MSC-14835	B75-10317 05	MSC-19482	B75-10173 06
MSC-13827	B71-10332 05	MSC-14865	B75-10318 09	MSC-19499	B75-10201 06
MSC-13850	B72-10174 07	MSC-14866	B75-10236 03	MSC-19504	B75-10109 01
MSC-13855	B71-10318 02	MSC-14883	B75-10319 08	MSC-19523	B75-10110 06
MSC-13857	B71-10326 02	MSC-14903	B75-10320 04	MSC-19528	B75-10111 06
MSC-13858	B72-10306 09	MSC-15060	B70-10160 07	MSC-19549	B75-10321 04
MSC-13860	B71-10523 08	MSC-15158	B70-10118 01	MSC-19554	B75-10322 07
MSC-13864	B72-10182 09	MSC-15165	B70-10306 07	MSC-90317	B70-10159 02
MSC-13880	B72-10390 02	MSC-15317	B71-10327 06		
MSC-13906	B72-10006 05	MSC-15474	B70-10198 07	NPO-10034	B72-10492 01
MSC-13917	B72-10281 05	MSC-15562	B70-10490 04	NPO-10066	B70-10060 02
MSC-13920	B71-10495 05	MSC-15565	B70-10217 01	NPO-10117	B72-10703 03
MSC-13923-4	B72-10005 04	MSC-15581	B71-10093 06	NPO-10250	B70-10182 04
MSC-13932	B71-10504 02	MSC-15624	B70-10547 07	NPO-10251	B70-10128 02
MSC-13965	B72-10034 03	MSC-15635	B70-10307 06	NPO-10271	B70-10129 03
MSC-13972	B74-10271 03	MSC-15636	B70-10019 08	NPO-10313	B71-10210 04
MSC-13977	B72-10015 09	MSC-15637	B70-10604 08	NPO-10351	B72-10226 01
MSC-13978	B72-10016 03	MSC-15646	B70-10041 08	NPO-10355	B71-10292 01
MSC-13980	B72-10001 03	MSC-15673	B70-10392 01	NPO-10388	B71-10371 02
MSC-13993	B72-10261 09	MSC-15685	B71-10094 06	NPO-10416	B70-10517 07
MSC-13995	B71-10413 09	MSC-15702	B70-10055 03	NPO-10417	B70-10226 03
MSC-13999	B72-10756 05	MSC-15703	B72-10075 06	NPO-10440	B70-10676 04
MSC-14002	B71-10521 05	MSC-15704	B71-10070 08	NPO-10447	B71-10291 04
MSC-14003	B72-10017 05	MSC-15712	B71-10069 01	NPO-10535	B70-10187 03
MSC-14005	B72-10018 02	MSC-15734	B71-10278 04	NPO-10556	B72-10007 01
MSC-14016	B72-10605 09	MSC-15750	B70-10548 07	NPO-10567	B70-10452 09
MSC-14024	B72-10445 08	MSC-15763	B70-10284 02	NPO-10619	B72-10554 03
MSC-14032	B72-10019 04	MSC-15773	B70-10038 08	NPO-10629	B70-10051 01
MSC-14053	B72-10285 02	MSC-15788	B70-10526 07	NPO-10636	B70-10051 01
MSC-14062	B75-10167 05	MSC-15803	B70-10679 07	NPO-10663	B70-10625 09
MSC-14070	B72-10573 02	MSC-15811	B70-10549 03	NPO-10671	B72-10712 06
MSC-14080	B75-10270 06	MSC-15813	B71-10095 06	NPO-10677	B70-10270 03
MSC-14084	B72-10545 02	MSC-15818	B72-10118 07	NPO-10678	B70-10033 01
MSC-14087	B72-10590 06	MSC-15819	B70-10666 04	NPO-10698	B70-10286 01
MSC-14088	B72-10446 06	MSC-15829	B75-10172 09	NPO-10700	B70-10007 02
MSC-14117	B72-10501 02	MSC-15831	B70-10624 08	NPO-10709	B70-10393 01
MSC-14118	B72-10435 03	MSC-15833	B70-10308 09	NPO-10714	B72-10553 04
MSC-14120	B72-10542 07	MSC-15874	B70-10542 07	NPO-10722	B70-10028 07
MSC-14121	B72-10539 07	MSC-15885	B70-10550 07	NPO-10730	B70-10171 07
MSC-14123	B72-10461 05	MSC-15887	B71-10096 05	NPO-10731	B70-10013 04
MSC-14126	B72-10391 05	MSC-15893	B70-10551 04	NPO-10733	B70-10164 02
MSC-14127	B72-10391 05	MSC-15953	B72-10117 07	NPO-10734	B70-10212 02
MSC-14138	B72-10544 04	MSC-15955	B70-10466 08	NPO-10743	B70-10046 01
MSC-14151	B72-10690 05	MSC-17009	B70-10699 07	NPO-10745	B70-10282 02
MSC-14161	B72-10750 09	MSC-17017	B71-10447 09	NPO-10746	B70-10008 02
MSC-14187	B74-10095 04	MSC-17139	B71-10517 02	NPO-10748	B70-10039 01
MSC-14198	B72-10734 08	MSC-17153	B71-10097 04	NPO-10750	B70-10221 03
MSC-14234	B72-10732 05	MSC-17183	B71-10516 07	NPO-10753	B70-10280 03
MSC-14245	B72-10733 06	MSC-17185	B72-10449 04	NPO-10755	B70-10090 07
MSC-14247	B72-10616 08	MSC-17211	B71-10319 04	NPO-10757	B70-10279 07
MSC-14276	B75-10168 05	MSC-17308	B71-10130 09	NPO-10765	B71-10004 04
MSC-14330	B75-10169 02	MSC-17324	B72-10453 01	NPO-10767	B71-10005 04
MSC-14331	B74-10157 04	MSC-17332	B71-10320 04	NPO-10768	B70-10353 04
MSC-14386	B75-10106 09	MSC-17348	B71-10328 07	NPO-10769	B73-10382 02
MSC-14407	B75-10040 03	MSC-17361	B71-10496 07	NPO-10773	B70-10613 09
MSC-14435	B74-10096 04	MSC-17457	B72-10076 02	NPO-10774	B70-10017 04
MSC-14472	B75-10080 03	MSC-17487	B71-10389 09	NPO-10778	B70-10292 03
MSC-14555	B74-10156 06	MSC-17526	B72-10510 02	NPO-10779	B70-10202 08
MSC-14557	B74-10025 02	MSC-17562	B71-10414 09	NPO-10797	B71-10159 07
MSC-14615	B74-10155 05	MSC-17563	B72-10071 09	NPO-10799	B70-10130 03
MSC-14618	B74-10154 04	MSC-17567	B71-10448 09	NPO-10808	B71-10449 07
MSC-14627	B75-10041 05	MSC-17619	B72-10625 09	NPO-10811	B70-10428 08
MSC-14632	B74-10153 05	MSC-17668	B72-10284 04	NPO-10827	B70-10158 09
MSC-14649	B74-10191 02	MSC-17694	B72-10335 09	NPO-10828	B71-10311 03
MSC-14688	B75-10042 04	MSC-17713	B72-10562 08	NPO-10840	B71-10472 09
MSC-14705	B74-10152 03	MSC-17738	B72-10338 06	NPO-10844	B70-10009 02
MSC-14717	B75-10107 02	MSC-17745	B72-10538 07	NPO-10858	B70-10518 02
MSC-14721	B74-10272 08	MSC-17827	B72-10735 01	NPO-10862	B70-10453 04
MSC-14724	B75-10043 03	MSC-17848	B72-10677 06	NPO-10863	B70-10131 04
MSC-14736	B74-10240 07	MSC-17930	B72-10722 06	NPO-10893	B70-10334 04
MSC-14774	B75-10233 01	MSC-19301	B75-10044 06	NPO-10895	B70-10132 09
MSC-14788	B75-10108 02	MSC-19335	B74-10023 07	NPO-10998	B71-10184 04
MSC-14792	B75-10271 04	MSC-19372	B74-10273 06		

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

NPO-10999	B71-10184 04	NPO-11401	B72-10245 01	NPO-11605	B71-10161 04
NPO-11012	B70-10523 07	NPO-11402	B72-10084 06	NPO-11608	B73-10137 03
NPO-11013	B70-10248 07	NPO-11403	B72-10085 03	NPO-11609	B74-10210 05
NPO-11055	B70-10076 01	NPO-11404	B72-10086 02	NPO-11612	B73-10138 02
NPO-11068	B70-10133 09	NPO-11405	B72-10087 03	NPO-11616	B73-10139 01
NPO-11069	B70-10067 09	NPO-11406	B73-10292 01	NPO-11617	B71-10188 06
NPO-11090	B70-10657 06	NPO-11407	B72-10507 02	NPO-11618	B71-10189 06
NPO-11104	B70-10590 02	NPO-11416	B72-10398 07	NPO-11619	B73-10384 09
NPO-11105	B70-10318 03	NPO-11417	B72-10723 06	NPO-11620	B73-10296 09
NPO-11115	B70-10606 09	NPO-11421	B72-10088 02	NPO-11623	B73-10297 02
NPO-11129	B70-10073 01	NPO-11423	B70-10519 02	NPO-11626	B73-10034 06
NPO-11131	B70-10524 01	NPO-11424	B71-10139 03	NPO-11627	B72-10155 01
NPO-11132	B71-10307 02	NPO-11427	B71-10191 03	NPO-11628	B73-10343 02
NPO-11139	B72-10711 04	NPO-11430	B71-10116 08	NPO-11630	B73-10355 02
NPO-11147	B70-10086 02	NPO-11431	B71-10281 06	NPO-11634	B72-10609 02
NPO-11161	B70-10163 02	NPO-11432	B72-10701 03	NPO-11635	B73-10298 08
NPO-11164	B70-10209 03	NPO-11437	B73-10293 02	NPO-11637	B73-10035 01
NPO-11165	B72-10077 01	NPO-11440	B73-10019 04	NPO-11639	B72-10159 01
NPO-11166	B70-10414 01	NPO-11444	B70-10718 02	NPO-11643	B71-10248 09
NPO-11201	B73-10131 03	NPO-11454	B70-10726 03	NPO-11645	B73-10276 06
NPO-11202	B70-10170 07	NPO-11457	B72-10089 02	NPO-11647	B73-10022 04
NPO-11210	B70-10435 02	NPO-11461	B74-10097 02	NPO-11648	B71-10133 09
NPO-11212	B70-10040 07	NPO-11464	B72-10090 04	NPO-11649	B71-10133 09
NPO-11215	B70-10253 05	NPO-11466	B71-10425 03	NPO-11651	B71-10133 09
NPO-11217	B70-10272 03	NPO-11469	B71-10006 09	NPO-11652	B71-10133 09
NPO-11219	B70-10275 01	NPO-11475	B71-10282 02	NPO-11658	B72-10704 06
NPO-11227	B70-10435 02	NPO-11477	B70-10674 04	NPO-11659	B73-10277 02
NPO-11230	B70-10006 05	NPO-11479	B72-10706 03	NPO-11661	B73-10299 02
NPO-11236	B70-10398 06	NPO-11480	B70-10683 03	NPO-11663	B72-10185 01
NPO-11238	B70-10344 02	NPO-11482	B72-10091 02	NPO-11667	B71-10308 09
NPO-11239	B70-10405 03	NPO-11486	B71-10451 02	NPO-11687	B71-10362 04
NPO-11240	B70-10231 03	NPO-11487	B71-10408 02	NPO-11688	B72-10702 03
NPO-11249	B70-10091 09	NPO-11491	B73-10165 09	NPO-11689	B73-10344 09
NPO-11250	B70-10208 04	NPO-11494	B72-10724 02	NPO-11701	B73-10140 03
NPO-11254	B70-10100 04	NPO-11497	B73-10294 02	NPO-11702	B73-10278 01
NPO-11256	B70-10078 09	NPO-11499	B72-10555 01	NPO-11703	B73-10345 02
NPO-11258	B70-10214 01	NPO-11502	B72-10092 01	NPO-11706	B73-10141 02
NPO-11261	B70-10399 06	NPO-11503	B72-10093 06	NPO-11707	B72-10694 02
NPO-11264	B73-10288 02	NPO-11504	B71-10131 03	NPO-11708	B71-10401 09
NPO-11282	B73-10356 01	NPO-11512	B73-10134 02	NPO-11709	B73-10300 09
NPO-11287	B72-10078 06	NPO-11515	B74-10098 02	NPO-11714	B71-10134 09
NPO-11288	B70-10612 04	NPO-11518	B72-10094 02	NPO-11716	B71-10138 09
NPO-11292	B70-10252 06	NPO-11519	B71-10160 03	NPO-11718	B72-10707 03
NPO-11302	B73-10342 02	NPO-11524	B72-10095 07	NPO-11725	B73-10142 04
NPO-11306	B72-10116 01	NPO-11527	B72-10096 01	NPO-11726	B73-10301 09
NPO-11311	B70-10354 03	NPO-11542	B71-10157 03	NPO-11727	B73-10036 04
NPO-11314	B70-10077 07	NPO-11544	B72-10097 06	NPO-11730	B73-10037 04
NPO-11322	B72-10244 03	NPO-11545	B72-10098 02	NPO-11731	B73-10302 09
NPO-11327	B70-10720 09	NPO-11546	B71-10132 01	NPO-11736	B72-10241 06
NPO-11330	B72-10713 06	NPO-11547	B71-10243 09	NPO-11738	B74-10194 03
NPO-11333	B73-10289 02	NPO-11548	B73-10273 02	NPO-11743	B73-10023 06
NPO-11337	B71-10187 06	NPO-11551	B71-10244 09	NPO-11744	B73-10024 04
NPO-11338	B70-10355 02	NPO-11554	B72-10341 03	NPO-11747	B73-10025 03
NPO-11339	B72-10079 01	NPO-11555	B71-10185 09	NPO-11749	B73-10303 09
NPO-11340	B70-10516 07	NPO-11556	B73-10383 03	NPO-11750	B74-10099 02
NPO-11341	B72-10080 01	NPO-11560	B72-10099 02	NPO-11761	B73-10346 01
NPO-11342	B73-10132 02	NPO-11561	B72-10100 01	NPO-11773	B74-10100 01
NPO-11346	B72-10243 05	NPO-11562	B72-10043 01	NPO-11775	B73-10385 04
NPO-11348	B72-10081 08	NPO-11563	B72-10315 01	NPO-11776	B73-10026 06
NPO-11349	B72-10082 03	NPO-11565	B73-10295 01	NPO-11790	B71-10390 09
NPO-11350	B70-10232 01	NPO-11567	B72-10101 02	NPO-11798	B71-10532 09
NPO-11351	B70-10234 02	NPO-11569	B73-10135 01	NPO-11800	B73-10114 09
NPO-11353	B71-10036 03	NPO-11570	B73-10136 01	NPO-11805	B72-10426 07
NPO-11354	B70-10400 07	NPO-11572	B74-10209 01	NPO-11815	B73-10386 01
NPO-11355	B70-10406 06	NPO-11573	B72-10508 02	NPO-11819	B73-10387 01
NPO-11358	B73-10290 02	NPO-11576	B71-10007 09	NPO-11820	B73-10388 04
NPO-11361	B73-10291 02	NPO-11577	B71-10007 09	NPO-11839	B73-10347 06
NPO-11365	B71-10370 02	NPO-11578	B71-10008 09	NPO-11846	B72-10186 01
NPO-11366	B72-10714 06	NPO-11579	B71-10008 09	NPO-11847	B71-10386 09
NPO-11367	B72-10083 03	NPO-11580	B73-10250 09	NPO-11849	B72-10556 03
NPO-11368	B72-10042 01	NPO-11586	B73-10020 04	NPO-11852	B75-10174 04
NPO-11369	B73-10133 03	NPO-11587	B73-10021 04	NPO-11853	B74-10101 03
NPO-11387	B72-10700 03	NPO-11590	B73-10274 09	NPO-11856	B72-10425 04
NPO-11388	B72-10138 01	NPO-11592	B72-10705 01	NPO-11859	B74-10102 03
NPO-11390	B70-10585 04	NPO-11598	B71-10109 06	NPO-11861	B73-10389 02
NPO-11396	B70-10236 06	NPO-11600	B73-10275 02	NPO-11870	B73-10348 06
NPO-11397	B70-10242 02	NPO-11602	B71-10158 04	NPO-11875	B74-10158 02
NPO-11399	B73-10354 02	NPO-11603	B72-10743 06	NPO-11881	B73-10349 04

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

NPO-11885	B72-10242 03	NPO-13178	B73-10467 02	NPO-13623	B75-10183 03
NPO-11886	B73-10390 01	NPO-13188	B73-10087 09	NPO-13626	B75-10177 05
NPO-11887	B74-10103 05	NPO-13201	B74-10298 07	NPO-13630	B75-10237 03
NPO-11892	B72-10072 09	NPO-13202	B73-10458 03	NPO-13643	B75-10211 05
NPO-11893	B73-10143 03	NPO-13205	B74-10299 02	NPO-13645	B75-10281 02
NPO-11895	B74-10211 03	NPO-13208	B73-10461 07	NPO-13646	B75-10337 01
NPO-11900	B73-10038 08	NPO-13213	B73-10088 09	NPO-13650	B75-10212 08
NPO-11905	B74-10274 01	NPO-13215	B75-10048 03	NPO-13658	B75-10282 06
NPO-11914	B73-10350 01	NPO-13217	B74-10300 02	NPO-99999	B75-10338 09
NPO-11918	B74-10159 04	NPO-13224	B75-10113 04		
NPO-11921	B73-10144 02	NPO-13231	B75-10275 02	NUC-10058	B70-10576 04
NPO-11924	B74-10160 01	NPO-13237	B75-10324 01	NUC-10101	B70-10686 03
NPO-11934	B72-10708 05	NPO-13245	B74-10284 02	NUC-10148	B71-10128 01
NPO-11936	B73-10351 01	NPO-13253	B75-10049 01	NUC-10151	B70-10467 04
NPO-11941	B74-10164 02	NPO-13263	B75-10050 03	NUC-10157	B70-10534 01
NPO-11942	B74-10161 03	NPO-13276	B75-10114 02	NUC-10185	B70-10566 07
NPO-11943	B72-10073 09	NPO-13285	B73-10352 02	NUC-10211	B70-10533 01
NPO-11948	B74-10162 02	NPO-13286	B75-10325 02	NUC-10222	B70-10567 07
NPO-11951	B74-10105 07	NPO-13289	B75-10115 03	NUC-10223	B71-10125 01
NPO-11958	B73-10450 07	NPO-13303	B75-10116 03	NUC-10225	B71-10101 07
NPO-11960	B72-10747 09	NPO-13304	B75-10276 07	NUC-10227	B70-10356 03
NPO-11962	B74-10163 02	NPO-13308	B73-10353 02	NUC-10229	B70-10357 03
NPO-11965	B73-10451 02	NPO-13309	B75-10117 04	NUC-10231	B71-10040 01
NPO-11966	B73-10391 08	NPO-13327	B75-10202 03	NUC-10239	B71-10043 01
NPO-11973	B72-10623 09	NPO-13342	B75-10203 06	NUC-10240	B70-10530 01
NPO-12003	B71-10315 07	NPO-13345	B75-10178 04	NUC-10241	B71-10039 09
NPO-12004	B72-10502 06	NPO-13346	B75-10118 03	NUC-10242	B71-10038 09
NPO-12011	B70-10702 01	NPO-13348	B75-10123 03	NUC-10246	B70-10358 07
NPO-12017	B70-10244 07	NPO-13368	B74-10215 09	NUC-10322	B71-10044 06
NPO-12026	B71-10293 08	NPO-13385	B75-10277 01	NUC-10352	B71-10045 08
NPO-12028	B72-10551 04	NPO-13390	B75-10119 03	NUC-10357	B71-10117 08
NPO-12029	B72-10552 06	NPO-13394	B75-10179 08	NUC-10372	B71-10046 03
NPO-12049	B71-10446 06	NPO-13408	B73-10520 01	NUC-10386	B71-10129 06
NPO-12061	B71-10154 04	NPO-13410	B75-10180 02	NUC-10389	B70-10565 01
NPO-12064	B70-10531 04	NPO-13419	B75-10120 01	NUC-10394	B71-10108 09
NPO-12067	B71-10289 04	NPO-13421	B75-10121 04	NUC-10413	B71-10102 01
NPO-12068	B71-10290 04	NPO-13423	B75-10051 05	NUC-10419	B71-10103 06
NPO-12076	B71-10028 08	NPO-13425	B75-10052 06	NUC-10530	B70-10564 03
NPO-12128	B74-10275 03	NPO-13428	B75-10326 02	NUC-10549	B70-10333 04
NPO-13044	B74-10106 02	NPO-13439	B75-10122 02	NUC-10551	B70-10197 03
NPO-13046	B74-10077 04	NPO-13441	B73-10459 01	NUC-10555	B70-10310 04
NPO-13051	B73-10460 02	NPO-13443	B75-10204 02	NUC-10556	B70-10310 04
NPO-13053	B73-10452 02	NPO-13451	B75-10278 09	NUC-10557	B71-10104 04
NPO-13055	B74-10212 03	NPO-13458	B74-10301 03	NUC-10558	B71-10105 04
NPO-13059	B74-10164 07	NPO-13459	B75-10181 03	NUC-11000	B71-10041 03
NPO-13063	B74-10213 05	NPO-13462	B75-10124 03	NUC-11001	B71-10042 04
NPO-13064	B74-10107 01	NPO-13464	B75-10203 06	NUC-11019	B72-10258 06
NPO-13067	B74-10165 02	NPO-13465	B75-10205 02	NUC-11020	B72-10228 06
NPO-13082	B74-10276 02	NPO-13470	B75-10053 09	NUC-11029	B70-10591 03
NPO-13084	B75-10045 05	NPO-13480	B74-10169 09	NUC-11034	B70-10592 03
NPO-13097	B75-10323 02	NPO-13482	B75-10125 03	NUC-11039	B70-10593 03
NPO-13105	B74-10166 03	NPO-13487	B75-10327 04	NUC-11104	B71-10037 09
NPO-13110	B75-10175 02	NPO-13490	B75-10279 03		
NPO-13112	B74-10108 03	NPO-13495	B75-10054 07		
NPO-13113	B73-10453 04	NPO-13497	B75-10182 03	SAN-10050	B71-10175 07
NPO-13114	B74-10167 03	NPO-13504	B75-10126 03	SAN-10051	B71-10176 02
NPO-13118	B74-10277 02	NPO-13519	B75-10051 05		
NPO-13123	B73-10454 02	NPO-13524	B75-10328 03		
NPO-13128	B74-10195 03	NPO-13525	B75-10240 02	XAC-2981	B71-10200 05
NPO-13131	B75-10112 03	NPO-13530	B75-10280 04	XAC-8972	B71-10202 05
NPO-13136	B74-10278 05	NPO-13531	B75-10127 03	XAC-01547	B72-10279 05
NPO-13138	B74-10295 01	NPO-13532	B75-10239 03	XAC-01670	B71-10249 03
NPO-13139	B74-10296 02	NPO-13535	B75-10238 08	XAC-05422	B72-10224 05
NPO-13140	B75-10046 02	NPO-13544	B75-10206 03	XAC-05506	B71-10283 03
NPO-13143	B74-10279 09	NPO-13555	B75-10207 04	XAC-05632	B74-10070 06
NPO-13146	B73-10521 07	NPO-13557	B75-10329 03	XAC-05695	B71-10235 03
NPO-13147	B75-10176 03	NPO-13560	B75-10208 06	XAC-08505	B72-10035 05
NPO-13148	B74-10214 08	NPO-13561	B75-10208 06	XAC-09489	B72-10037 07
NPO-13149	B73-10455 06	NPO-13568	B75-10330 01	XAC-10048	B72-10037 06
NPO-13151	B73-10456 06	NPO-13572	B75-10331 05	XAC-10768	B72-10170 03
NPO-13153	B74-10280 01	NPO-13579	B75-10209 06	XAC-10770	B71-10120 03
NPO-13154	B74-10168 03	NPO-13580	B75-10210 03		
NPO-13157	B74-10281 01	NPO-13604	B75-10332 03		
NPO-13160	B74-10282 01	NPO-13606	B75-10333 03		
NPO-13168	B73-10457 04	NPO-13613	B75-10334 07	XGS-03644	B73-10517 03
NPO-13170	B74-10297 07	NPO-13614	B75-10335 03	XGS-05290	B70-10691 02
NPO-13171	B74-10283 01	NPO-13615	B75-10128 03	XGS-06226	B70-10425 01
NPO-13175	B75-10047 03	NPO-13620	B75-10336 04	XGS-06306	B70-10327 04

ORIGINATING CENTER/TECH BRIEF NUMBER INDEX

XGS-07805	B73-10304 01
XGS-10439	B70-10186 01
XGS-11370	B71-10064 02
XKS-08485	B70-10016 01
XLA-05099	B73-10360 09
XLA-06473	B70-10419 04
XLA-07391	B71-10178 07
XLA-07829	B71-10063 05
XLA-08493	B70-10192 01
XLA-10372	B70-10328 01
XLA-10773	B70-10096 01
XLA-11028	B74-10233 06
XLA-11154	B71-10190 01

TECH BRIEF/ORIGINATING CENTER

NUMBER INDEX

Cumulative Index to NASA Tech Briefs

1970—1975

Tech Brief/Originating Center Number Index

The left hand column identifies the Tech Brief number, e.g., B75-10001, followed by a two-digit number, e.g., 03, which identifies the subject category containing the entire citation. Following the subject category number is the originating Center number.

B70-10001 05	HQ-09000	B70-10043 01	LEWIS-10886	B70-10109 01	M-FS-20610
B70-10002 02	LEWIS-10954	B70-10044 08	M-FS-16725	B70-10110 02	MSC-13282
B70-10003 01	HQ-10497	B70-10045 01	ARG-10243	B70-10111 03	HQ-10041
B70-10004 04	HQ-10268	B70-10046 01	NPO-10743	B70-10112 02	M-FS-14346
B70-10005 01	GSFC-10735	B70-10047 02	ERC-90076	B70-10113 03	HQ-10167
B70-10006 05	NPO-11230	B70-10049 01	LEWIS-10822	B70-10114 04	LEWIS-11052
B70-10007 02	NPO-10700	B70-10050 07	M-FS-20663	B70-10115 02	LANGLEY-10255
B70-10008 02	NPO-10746	B70-10051 01	NPO-10629	B70-10116 06	GSFC-10801
B70-10009 02	NPO-10844		NPO-10636	B70-10117 01	MSC-13489
B70-10010 01	M-FS-14322	B70-10053 01	GSFC-10837	B70-10118 01	MSC-15158
B70-10011 04	GSFC-10159	B70-10054 04	HQ-10266	B70-10119 01	KSC-10111
B70-10012 06	M-FS-20561	B70-10055 03	MSC-15702	B70-10120 08	M-FS-18789
B70-10013 04	NPO-10731	B70-10056 02	ARC-10138	B70-10121 08	M-FS-18705
B70-10014 07	M-FS-20433	B70-10057 01	HQ-10477	B70-10122 03	M-FS-18115
B70-10015 08	M-FS-20560	B70-10058 04	HQ-10522	B70-10123 01	M-FS-20687
B70-10016 01	XKS-08485	B70-10059 01	HQ-10536	B70-10124 06	M-FS-18087
B70-10017 04	NPO-10774	B70-10060 02	NPO-10066	B70-10125 05	M-FS-20640
B70-10018 01	LANGLEY-10227	B70-10061 03	ARG-10060	B70-10126 07	M-FS-20684
B70-10019 08	MSC-15636	B70-10062 06	LEWIS-11067	B70-10127 08	M-FS-20714
B70-10020 03	HQ-09954	B70-10063 09	KSC-10315	B70-10128 02	NPO-10251
	HQ-09955	B70-10064 01	HQ-10359	B70-10129 03	NPO-10271
B70-10021 01	HQ-10452	B70-10065 01	LEWIS-10442	B70-10130 03	NPO-10799
	HQ-10453	B70-10066 07	M-FS-12458	B70-10131 04	NPO-10863
	HQ-10454	B70-10067 09	NPO-11069	B70-10132 09	NPO-10895
B70-10022 01	HQ-10488	B70-10068 07	M-FS-14160	B70-10133 09	NPO-11068
B70-10023 02	LANGLEY-10387	B70-10069 02	HQ-10317	B70-10135 03	M-FS-20627
B70-10024 01	HQ-10230	B70-10070 01	ARG-90108	B70-10136 08	LANGLEY-10103
B70-10025 01	GSFC-10750	B70-10071 03	KSC-10508	B70-10137 03	HQ-10498
B70-10027 04	LEWIS-10876	B70-10072 07	HQ-10508	B70-10138 02	HQ-10373
B70-10028 07	NPO-10722	B70-10073 01	NPO-11129	B70-10140 04	M-FS-20667
B70-10029 01	LEWIS-10964	B70-10074 01	HQ-10152	B70-10141 01	HQ-10358
B70-10030 05	MSC-13407	B70-10075 01	ERC-10088	B70-10142 01	ARG-10354
B70-10031 03	MSC-13222	B70-10076 01	NPO-11055	B70-10143 02	M-FS-20583
B70-10032 02	HQ-10563	B70-10077 07	NPO-11314	B70-10144 07	M-FS-16249
	HQ-10564	B70-10078 09	NPO-11256	B70-10145 01	HQ-10537
B70-10033 01	NPO-10678	B70-10079 01	ARC-10289	B70-10146 04	M-FS-18659
B70-10034 01	ARC-10020	B70-10080 04	LEWIS-11017	B70-10147 02	HQ-10545
B70-10035 01	HQ-10565	B70-10081 04	M-FS-18633	B70-10148 01	GSFC-10827
B70-10036 03	ARG-10487	B70-10082 01	HQ-10547	B70-10149 01	KSC-10300
B70-10037 07	MSC-13433	B70-10083 04	HQ-10242	B70-10150 01	LEWIS-10984
B70-10038 08	MSC-15773	B70-10084 04	HQ-10472	B70-10151 01	LEWIS-10969
B70-10039 01	NPO-10748	B70-10085 03	M-FS-14834	B70-10152 02	LEWIS-11022
B70-10040 07	NPO-11212	B70-10086 02	NPO-11147	B70-10153 01	GSFC-10792
B70-10041 08	MSC-15646	B70-10087 07	MSC-13408	B70-10154 01	M-FS-20408
		B70-10088 07	M-FS-13466	B70-10155 08	M-FS-20715
		B70-10089 07	M-FS-14170	B70-10156 06	M-FS-14943
		B70-10090 07	NPO-10755	B70-10157 01	HQ-10548
		B70-10091 09	NPO-11249	B70-10158 09	NPO-10827
		B70-10092 04	M-FS-18712	B70-10159 02	MSC-90317
		B70-10093 06	M-FS-20503	B70-10160 07	MSC-15060
		B70-10094 04	HQ-10271	B70-10161 02	ARC-10101
		B70-10095 02	MSC-12205	B70-10162 04	M-FS-18612
		B70-10096 01	XLA-10773	B70-10163 02	NPO-11161
		B70-10097 01	HQ-10147	B70-10164 02	NPO-10733
		B70-10098 02	HQ-10215	B70-10165 07	MSC-13437
		B70-10099 03	LEWIS-11007	B70-10166 06	M-FS-16215
		B70-10100 04	NPO-11254	B70-10167 03	HQ-10446
		B70-10101 07	KSC-10072	B70-10168 03	HQ-10213
		B70-10102 03	KSC-10399	B70-10169 02	HQ-10253
		B70-10103 07	LANGLEY-10576	B70-10170 07	NPO-11202
		B70-10104 04	LANGLEY-10036	B70-10171 07	NPO-10730
		B70-10105 04	M-FS-14948	B70-10172 01	M-FS-15115
		B70-10106 03	M-FS-20543	B70-10173 03	M-FS-18561
		B70-10107 05	M-FS-14797	B70-10174 01	LEWIS-10926
		B70-10108 03	HQ-10389	B70-10175 04	LEWIS-10983

PRECEDING PAGE BLANK NOT FILLED
PRECEDING PAGE BLANK NOT FILLED

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B70-10176 07	M-FS-18589	B70-10257 09	M-FS-14510	B70-10331 08	LEWIS-11026
B70-10177 04	ARG-10446	B70-10258 04	MSC-13409	B70-10332 02	LEWIS-11051
B70-10179 01	M-FS-14977		MSC-13410	B70-10333 04	NUC-10549
B70-10180 01	MSC-12223		MSC-13411	B70-10334 04	NPO-10893
B70-10181 01	GSFC-10790	B70-10259 04	M-FS-18696	B70-10335 01	KSC-10164
B70-10182 04	NPO-10250	B70-10260 03	HQ-10332	B70-10336 01	HQ-10146
B70-10183 04	LEWIS-10933	B70-10261 04	M-FS-18775	B70-10337 01	ARC-10264
B70-10184 09	M-FS-20164	B70-10262 01	HQ-10577	B70-10338 01	ARC-10262
B70-10185 04	LEWIS-10515	B70-10263 02	HQ-10326	B70-10339 07	KSC-10069
B70-10186 01	XGS-10439	B70-10264 01	KSC-10278	B70-10340 01	KSC-10172
B70-10187 03	NPO-10535	B70-10265 09	M-FS-20266	B70-10341 03	M-FS-20701
B70-10188 01	GSFC-10789	B70-10266 01	GSFC-10886	B70-10342 08	LANGLEY-10125
B70-10189 03	M-FS-16695	B70-10267 01	M-FS-13987	B70-10343 07	LEWIS-11076
B70-10190 01	MSC-11773	B70-10268 03	MSC-12295	B70-10344 02	NPO-11238
B70-10191 01	M-FS-20615	B70-10269 03	ERC-10463	B70-10345 01	GSFC-10441
B70-10192 01	XLA-08493	B70-10270 03	NPO-10677	B70-10346 02	GSFC-10065
B70-10193 07	M-FS-20645	B70-10271 03	HQ-10347	B70-10347 07	LEWIS-11075
B70-10194 08	M-FS-13823	B70-10272 03	NPO-11217	B70-10348 07	M-FS-20812
B70-10195 02	GSFC-10891	B70-10273 04	LANGLEY-10126	B70-10349 04	KSC-10517
B70-10196 02	M-FS-13691	B70-10274 06	HQ-10159	B70-10350 06	KSC-10520
B70-10197 03	NUC-10551	B70-10275 01	NPO-11219	B70-10351 01	LEWIS-11045
B70-10198 07	MSC-15474	B70-10276 01	HQ-10382	B70-10352 06	LEWIS-11094
B70-10199 04	M-FS-18427	B70-10277 01	MSC-13174	B70-10353 04	NPO-10768
B70-10200 01	HQ-10534	B70-10278 01	GSFC-10661	B70-10354 03	NPO-11311
B70-10201 05	HQ-10270	B70-10279 07	NPO-10757	B70-10355 02	NPO-11338
B70-10202 08	NPO-10779	B70-10280 03	NPO-10753	B70-10356 03	NUC-10227
B70-10203 01	M-FS-14487	B70-10281 02	M-FS-14244	B70-10357 03	NUC-10229
B70-10205 04	HQ-10267	B70-10282 02	NPO-10745	B70-10358 07	NUC-10246
B70-10206 04	HQ-10450	B70-10283 07	M-FS-14259	B70-10360 03	LANGLEY-10618
B70-10207 07	M-FS-16444	B70-10284 02	MSC-15763	B70-10361 04	LEWIS-11060
B70-10208 04	NPO-11250	B70-10285 04	M-FS-20576	B70-10362 07	LEWIS-11063
B70-10209 03	NPO-11164	B70-10286 01	NPO-10698	B70-10363 07	M-FS-18618
B70-10210 04	LEWIS-10936	B70-10287 07	LEWIS-10966	B70-10364 04	M-FS-18753
B70-10211 02	GSFC-10721	B70-10288 06	LEWIS-11061	B70-10365 01	M-FS-18804
B70-10212 02	NPO-10734	B70-10289 07	KSC-10504	B70-10366 04	M-FS-18815
B70-10213 04	M-FS-18790	B70-10290 02	MSC-12318	B70-10367 08	M-FS-18821
B70-10214 01	NPO-11258	B70-10291 07	M-FS-20726	B70-10368 07	M-FS-20508
B70-10215 08	GSFC-10833	B70-10292 03	NPO-10778	B70-10369 04	M-FS-20559
B70-10216 01	ARG-10364	B70-10293 06	HQ-10520	B70-10370 01	GSFC-10718
B70-10217 01	MSC-15565	B70-10294 04	HQ-10269	B70-10371 03	ERC-10318
B70-10218 01	MSC-13358	B70-10295 07	HQ-10442	B70-10372 01	ERC-10211
B70-10219 01	M-FS-16648	B70-10296 03	HQ-10087	B70-10373 01	ERC-10122
B70-10220 02	M-FS-16298	B70-10298 01	LANGLEY-10620	B70-10374 09	ERC-10212
B70-10221 03	NPO-10750	B70-10299 03	M-FS-20449	B70-10376 01	ERC-90066
B70-10222 04	HQ-10112	B70-10300 04	LEWIS-10861	B70-10377 02	ERC-10227
B70-10223 03	LANGLEY-10452	B70-10301 06	M-FS-20764	B70-10378 01	ERC-10237
B70-10225 06	KSC-10400	B70-10302 07	MSC-11325	B70-10379 03	ERC-10197
B70-10226 03	NPO-10417	B70-10303 01	MSC-12327	B70-10380 01	ERC-10213
B70-10227 06	M-FS-18713	B70-10304 01	MSC-12335	B70-10381 03	ERC-10094
B70-10228 07	M-FS-18608	B70-10305 01	MSC-13492	B70-10382 01	ERC-10082
B70-10229 01	KSC-10294	B70-10306 07	MSC-15165	B70-10383 01	ERC-10290
B70-10230 09	M-FS-20447	B70-10307 06	MSC-15635	B70-10384 01	ERC-10312
B70-10231 03	NPO-11240	B70-10308 09	MSC-15833	B70-10385 01	ERC-10313
B70-10232 01	NPO-11350	B70-10309 06	M-FS-20491	B70-10386 04	M-FS-20634
B70-10233 04	ARG-10412	B70-10310 04	NUC-10555	B70-10387 01	M-FS-20757
B70-10234 02	NPO-11351		NUC-10556	B70-10388 06	M-FS-20799
B70-10235 04	LANGLEY-10743	B70-10311 03	M-FS-14464	B70-10389 07	M-FS-20802
B70-10236 06	NPO-11396	B70-10312 07	LEWIS-10286	B70-10390 07	M-FS-20805
B70-10237 01	ARC-10030	B70-10313 07	M-FS-20756	B70-10391 07	M-FS-20819
B70-10238 02	M-FS-20445	B70-10314 01	M-FS-20015	B70-10392 01	MSC-15673
B70-10239 02	GSFC-10293		M-FS-20016	B70-10393 01	NPO-10709
B70-10240 03	ARG-10249	B70-10315 03	M-FS-20639	B70-10394 06	M-FS-16172
B70-10241 08	M-FS-20544	B70-10316 04	M-FS-20272	B70-10395 06	M-FS-20773
B70-10242 02	NPO-11397	B70-10317 09	LEWIS-10975	B70-10396 04	M-FS-20788
B70-10243 04	M-FS-14385	B70-10318 03	NPO-11105	B70-10397 08	M-FS-20793
B70-10244 07	NPO-12017	B70-10319 03	MSC-13450	B70-10398 06	NPO-11236
B70-10246 02	HQ-10379	B70-10320 07	KSC-10470	B70-10399 06	NPO-11261
B70-10247 01	GSFC-10275	B70-10321 03	LEWIS-90237	B70-10400 07	NPO-11354
	GSFC-10276	B70-10322 07	LEWIS-11082	B70-10401 05	ARC-10095
B70-10248 07	NPO-11013	B70-10323 01	LEWIS-11083	B70-10402 04	LANGLEY-10180
B70-10249 01	LANGLEY-10607	B70-10324 03	M-FS-20630	B70-10403 04	LANGLEY-10221
B70-10250 01	GSFC-10878	B70-10325 03	M-FS-18677	B70-10404 04	LANGLEY-10299
B70-10252 06	NPO-11292	B70-10326 01	MSC-13385	B70-10405 03	NPO-11239
B70-10253 05	NPO-11215	B70-10327 04	XGS-06306	B70-10406 06	NPO-11355
B70-10254 05	HQ-10179	B70-10328 01	XLA-10372	B70-10407 01	ARC-10019
B70-10255 05	M-FS-20349	B70-10329 01	ARC-10012	B70-10408 06	M-FS-15121
B70-10256 03	M-FS-20509	B70-10330 04	LEWIS-10860	B70-10409 07	M-FS-18495

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B70-10411 06	M-FS-20730	B70-10490 04	MSC-15562	B70-10565 01	NUC-10389
B70-10412 08	M-FS-20753	B70-10491 03	ERC-10305	B70-10566 07	NUC-10185
B70-10413 03	MSC-12237	B70-10492 01	ERC-10032	B70-10567 07	NUC-10222
B70-10414 01	NPO-11166	B70-10493 03	ERC-10034	B70-10568 05	ARC-10049
B70-10415 03	M-FS-14740	B70-10494 01	ERC-10139	B70-10569 01	LEWIS-11109
B70-10416 07	LEWIS-11064	B70-10495 01	ERC-10149	B70-10570 01	MSC-13275
B70-10417 08	M-FS-20806	B70-10496 09	ARC-10159	B70-10571 04	M-FS-18649
B70-10418 07	M-FS-20827	B70-10497 04	ERC-10239	B70-10572 02	M-FS-20778
B70-10419 04	XLA-06473	B70-10498 01	LEWIS-11175	B70-10573 04	LEWIS-10887
B70-10420 05	ARC-10268	B70-10499 01	ERC-10284	B70-10574 04	HQ-10574
B70-10421 02	GSFC-10324	B70-10500 01	ERC-10302	B70-10575 03	LEWIS-11156
B70-10422 02	M-FS-20507	B70-10501 09	ERC-10273	B70-10576 04	NUC-10058
B70-10423 04	M-FS-16063	B70-10502 07	KSC-10514	B70-10577 07	M-FS-20725
B70-10424 07	GSFC-10910	B70-10503 06	LEWIS-10510	B70-10578 04	LANGLEY-10676
B70-10425 01	XGS-06226	B70-10504 04	LEWIS-11056	B70-10579 01	LEWIS-10387
B70-10426 03	HQ-10499	B70-10505 01	M-FS-20558	B70-10580 08	LEWIS-11085
B70-10427 06	MSC-13493	B70-10506 04	M-FS-18794	B70-10581 03	GSFC-10128
B70-10428 08	NPO-10811	B70-10507 02	ERC-10248	B70-10582 06	KSC-10515
B70-10429 08	LEWIS-10698	B70-10508 01	ARC-10032	B70-10583 07	KSC-10516
B70-10430 08	LEWIS-10700	B70-10509 07	ARC-10140	B70-10584 01	LEWIS-11003
B70-10431 06	HQ-10585	B70-10510 03	ARC-10147	B70-10585 04	NPO-11390
B70-10432 04	HQ-10593	B70-10511 01	ARC-10265	B70-10586 07	M-FS-18690
B70-10433 06	HQ-10486	B70-10512 08	ARC-10358	B70-10588 04	LEWIS-11046
B70-10434 02	HQ-10550	B70-10513 08	M-FS-20698	B70-10589 07	M-FS-18737
B70-10435 02	NPO-11210	B70-10514 08	M-FS-20824	B70-10590 02	NPO-11104
	NPO-11227	B70-10515 01	M-FS-20843	B70-10591 03	NUC-11029
B70-10436 05	ERC-10336	B70-10516 07	KSC-10394	B70-10592 03	NUC-11034
B70-10437 01	ERC-10386	B70-10517 07	NPO-11340	B70-10593 03	NUC-11039
B70-10438 03	MSC-13234	B70-10518 02	NPO-10416	B70-10594 08	M-FS-15180
B70-10439 03	ARC-10388	B70-10519 02	NPO-10858	B70-10595 07	M-FS-20830
B70-10440 01	ERC-10010	B70-10520 04	NPO-11423	B70-10596 03	LEWIS-10697
B70-10441 03	HQ-10552	B70-10521 01	LANGLEY-10539	B70-10597 09	M-FS-14292
B70-10442 03	MSC-13377	B70-10522 02	GSFC-10097	B70-10598 06	M-FS-20556
B70-10444 04	ERC-10256	B70-10523 07	M-FS-12613	B70-10599 09	M-FS-15039
B70-10445 03	ERC-10277	B70-10524 01	NPO-11012	B70-10600 04	GSFC-10361
B70-10446 09	ERC-10262	B70-10525 05	NPO-11131	B70-10602 09	MSC-13176
B70-10447 05	ERC-10233	B70-10526 07	LANGLEY-10705	B70-10603 09	M-FS-15081
B70-10448 01	ERC-10293	B70-10527 04	MSC-15788	B70-10604 08	MSC-15637
B70-10449 06	ERC-90051	B70-10528 05	M-FS-18614	B70-10605 09	M-FS-15067
B70-10450 04	ARC-10099	B70-10529 05	MSC-13436	B70-10606 09	NPO-11115
B70-10451 02	M-FS-14518	B70-10530 01	KSC-10577	B70-10607 01	HQ-09962
B70-10452 09	NPO-10567	B70-10531 04	NUC-10240	B70-10608 03	ARG-10281
B70-10453 04	NPO-10862	B70-10532 09	NPO-12064	B70-10609 07	LEWIS-11113
B70-10454 01	ERC-10217	B70-10533 01	LANGLEY-10590	B70-10610 07	LEWIS-90264
B70-10455 07	M-FS-16730	B70-10534 01	NUC-10211	B70-10611 03	LANGLEY-10535
B70-10456 05	KSC-10502	B70-10535 07	NUC-10157	B70-10612 04	NPO-11288
B70-10457 02	ERC-10285	B70-10536 03	LEWIS-11117	B70-10613 09	NPO-10773
B70-10459 01	LEWIS-10889	B70-10537 08	MSC-13460	B70-10614 09	M-FS-14513
B70-10460 01	ERC-10266	B70-10538 02	LEWIS-10928	B70-10615 09	ARC-10223
B70-10461 03	ERC-10404	B70-10539 03	KSC-10392	B70-10616 02	HQ-10502
B70-10462 01	GSFC-10943	B70-10540 04	M-FS-14832	B70-10617 02	MSC-13428
B70-10463 04	LANGLEY-10675		MSC-13571	B70-10618 04	LEWIS-11219
B70-10464 02	ERC-10098	B70-10541 01	MSC-13572	B70-10619 05	LANGLEY-10679
B70-10465 07	MSC-13512	B70-10542 07	MSC-13425	B70-10620 03	LANGLEY-10397
B70-10466 08	MSC-15955	B70-10543 07	MSC-15874	B70-10621 04	MSC-13557
B70-10467 04	NUC-10151	B70-10544 08	KSC-10555	B70-10622 03	MSC-13443
B70-10468 07	LEWIS-10856	B70-10545 05	MSC-12109	B70-10623 06	MSC-13139
B70-10469 05	LEWIS-11057	B70-10546 04	MSC-12320	B70-10624 08	MSC-15831
B70-10470 01	LEWIS-11068	B70-10547 07	MSC-13432	B70-10625 09	NPO-10663
B70-10471 03	LEWIS-11103	B70-10548 07	MSC-15624	B70-10626 06	M-FS-14333
B70-10472 03	ERC-90017	B70-10549 03	MSC-15750	B70-10627 06	M-FS-20803
B70-10473 03	ERC-10301	B70-10550 07	MSC-15811	B70-10628 03	LEWIS-11208
B70-10474 01	ERC-10303	B70-10551 04	MSC-15885	B70-10629 01	LANGLEY-10779
B70-10475 04	ERC-10130	B70-10552 01	MSC-15893	B70-10630 01	LEWIS-11151
B70-10476 01	ERC-10223	B70-10553 01	LEWIS-11111	B70-10631 03	ARC-10156
B70-10477 01	ERC-10264	B70-10554 02	KSC-10537	B70-10632 03	ARC-10031
B70-10478 02	ERC-10065	B70-10555 09	LEWIS-10124	B70-10633 02	ARC-10287
B70-10479 02	ERC-10306	B70-10556 09	M-FS-16597	B70-10634 04	LEWIS-11221
B70-10480 02	ERC-10187	B70-10557 09	HQ-10426	B70-10635 07	LEWIS-11241
B70-10481 02	ERC-10271	B70-10558 07	LEWIS-10949	B70-10636 07	ARC-10203
B70-10482 01	MSC-12209	B70-10559 07	M-FS-20635	B70-10637 09	ARC-10359
B70-10483 01	M-FS-16658	B70-10560 01	M-FS-15110	B70-10638 02	ARC-10097
B70-10484 09	KSC-10373	B70-10561 09	KSC-10573	B70-10639 02	LANGLEY-10627
B70-10485 02	GSFC-10299	B70-10562 01	KSC-10574	B70-10640 07	MSC-13441
B70-10487 02	M-FS-15069	B70-10562 03	KSC-10397	B70-10641 02	GSFC-10831
B70-10488 01	KSC-10562	B70-10563 03	LEWIS-11096	B70-10642 09	MSC-13387
B70-10489 08	MSC-13554	B70-10564 03	NUC-10530	B70-10643 01	GSFC-10982

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B70-10644 04	MSC-13586	B71-10002 09	LANGLEY-10658	B71-10075 01	HQ-10407
B70-10645 04	M-FS-18844	B71-10003 09	M-FS-20770	B71-10076 08	LANGLEY-10488
	M-FS-18845	B71-10004 04	NPO-10765		LANGLEY-10610
B70-10646 03	LEWIS-90361	B71-10005 04	NPO-10767	B71-10077 04	M-FS-20486
B70-10647 06	M-FS-20791	B71-10006 09	NPO-11469	B71-10078 04	M-FS-21169
B70-10648 01	LEWIS-10951	B71-10007 09	NPO-11576	B71-10079 04	LEWIS-11220
B70-10649 03	M-FS-20638		NPO-11577	B71-10080 07	LEWIS-11233
B70-10650 01	HQ-10435	B71-10008 09	NPO-11578	B71-10081 07	MSC-12121
B70-10651 01	LEWIS-11154		NPO-11579	B71-10082 02	MSC-12388
B70-10652 07	LEWIS-11193	B71-10009 04	LANGLEY-10268	B71-10083 07	MSC-13451
B70-10653 07	MSC-13430	B71-10010 04	LEWIS-11130	B71-10084 01	MSC-13497
B70-10654 08	M-FS-20823	B71-10011 01	M-FS-15134	B71-10085 03	MSC-13506
B70-10655 01	LEWIS-11222	B71-10012 07	M-FS-18711	B71-10086 09	MSC-13539
B70-10656 03	LANGLEY-10626	B71-10013 01	M-FS-18921	B71-10087 02	MSC-13542
B70-10657 06	NPO-11090	B71-10014 01	M-FS-20257	B71-10088 01	MSC-13639
B70-10658 03	M-FS-20675	B71-10015 03	M-FS-20470	B71-10089 01	MSC-13686
B70-10659 03	M-FS-20736	B71-10016 01	M-FS-20476	B71-10090 02	MSC-13728
B70-10660 09	LANGLEY-10711	B71-10017 09	GSFC-11191	B71-10091 02	MSC-12165
B70-10661 04	M-FS-20837	B71-10018 07	KSC-10519	B71-10092 05	MSC-12398
B70-10662 02	LANGLEY-10619	B71-10019 02	M-FS-20324	B71-10093 06	MSC-15581
B70-10663 08	M-FS-20876	B71-10020 07	M-FS-18774	B71-10094 06	MSC-15685
B70-10664 02	GSFC-10983	B71-10021 01	M-FS-20748	B71-10095 06	MSC-15813
B70-10665 03	M-FS-20686	B71-10022 03	M-FS-20749	B71-10096 05	MSC-15887
B70-10666 04	MSC-15819	B71-10023 07	M-FS-20916	B71-10097 04	MSC-17153
B70-10667 03	M-FS-18754	B71-10024 05	M-FS-21047	B71-10098 07	LEWIS-11212
B70-10668 07	LEWIS-10553	B71-10025 01	GSFC-11013	B71-10099 04	LEWIS-11230
B70-10669 09	LEWIS-11029	B71-10026 03	HQ-10546	B71-10100 07	LEWIS-10256
B70-10670 03	LEWIS-11129	B71-10027 04	M-FS-13777	B71-10101 07	NUC-10225
B70-10671 07	LEWIS-11105	B71-10028 08	NPO-12076	B71-10102 01	NUC-10413
B70-10672 04	LEWIS-11209	B71-10029 01	LANGLEY-10503	B71-10103 06	NUC-10419
B70-10673 03	LEWIS-11171	B71-10030 09	ARC-10424	B71-10104 04	NUC-10557
B70-10674 04	NPO-11477	B71-10031 03	M-FS-20613	B71-10105 04	NUC-10558
B70-10676 04	NPO-10440	B71-10032 01	M-FS-21049	B71-10106 09	M-FS-21075
B70-10677 03	LEWIS-11172	B71-10033 01	GSFC-10928	B71-10107 05	M-FS-21044
B70-10678 03	LEWIS-11170	B71-10034 04	M-FS-14671		M-FS-21045
B70-10679 07	MSC-15803	B71-10035 01	LANGLEY-10358	B71-10108 09	NUC-10394
B70-10680 03	KSC-10522		LANGLEY-10444	B71-10109 06	NPO-11598
B70-10681 03	M-FS-20554	B71-10036 03	NPO-11353	B71-10110 03	GSFC-10855
B70-10683 03	NPO-11480	B71-10037 09	NUC-11104	B71-10111 03	M-FS-21119
B70-10684 01	MSC-13637	B71-10038 09	NUC-10242	B71-10112 03	ARC-10194
B70-10686 03	NUC-10101	B71-10039 09	NUC-10241	B71-10113 03	ARC-10213
B70-10687 01	HQ-10594	B71-10040 01	NUC-10231	B71-10114 01	ARC-10349
B70-10688 07	MSC-13587	B71-10041 03	NUC-11000	B71-10115 09	LEWIS-11236
B70-10689 01	LEWIS-11155	B71-10042 04	NUC-11001	B71-10116 08	NPO-11430
B70-10690 03	M-FS-20816	B71-10043 01	NUC-10239	B71-10117 08	NUC-10357
B70-10691 02	XGS-05290	B71-10044 06	NUC-10322	B71-10118 03	LEWIS-11329
B70-10692 07	HQ-10609	B71-10045 08	NUC-10352	B71-10119 02	ARC-10392
B70-10694 03	ARC-10178	B71-10046 03	NUC-10372	B71-10120 03	XAC-10770
B70-10695 06	LANGLEY-10312	B71-10047 05	ARG-10413	B71-10121 01	LEWIS-11291
B70-10696 01	GSFC-10729	B71-10048 08	ARG-10449	B71-10122 09	LRL-10050
	GSFC-10730	B71-10049 02	ARG-90001	B71-10123 08	M-FS-14924
	GSFC-10731	B71-10050 08	ARG-90033	B71-10124 05	M-FS-21236
B70-10697 05	MSC-13653	B71-10051 05	GSFC-11092	B71-10125 01	NUC-10223
B70-10698 09	MSC-13625	B71-10052 09	LANGLEY-10738	B71-10126 02	LANGLEY-10543
B70-10699 07	MSC-17009	B71-10054 09	GSFC-10386	B71-10127 08	LANGLEY-10742
B70-10700 01	KSC-10565	B71-10055 04	GSFC-11169	B71-10128 01	NUC-10148
B70-10701 07	M-FS-18813	B71-10056 02	GSFC-10820	B71-10129 06	NUC-10386
B70-10702 01	NPO-12011	B71-10057 02	HQ-10434	B71-10130 09	MSC-17308
B70-10705 09	M-FS-01504	B71-10058 04	LEWIS-11206	B71-10131 03	NPO-11504
B70-10706 08	LEWIS-11065	B71-10059 05	M-FS-20005	B71-10132 01	NPO-11546
B70-10710 06	LANGLEY-10684	B71-10060 08	M-FS-20120	B71-10133 09	NPO-11648
B70-10711 03	LANGLEY-10292	B71-10061 04	LANGLEY-10443		NPO-11649
B70-10712 06	LANGLEY-10795	B71-10062 08	M-FS-20842		NPO-11651
B70-10714 07	M-FS-20908	B71-10063 05	XLA-07829		NPO-11652
B70-10715 06	M-FS-18822	B71-10064 02	XGS-11370	B71-10134 09	NPO-11716
B70-10716 02	LANGLEY-10756	B71-10065 03	MSC-13507	B71-10135 08	LEWIS-11276
B70-10718 02	NPO-11444	B71-10066 03	MSC-13476	B71-10136 01	LEWIS-11282
B70-10719 08	M-FS-20122	B71-10067 07	MSC-13262	B71-10137 05	MSC-12305
B70-10720 09	NPO-11327	B71-10068 03	MSC-12386	B71-10138 09	NPO-11718
B70-10721 01	LEWIS-90265	B71-10069 01	MSC-15712	B71-10139 03	NPO-11424
B70-10722 01	LEWIS-11080	B71-10070 08	MSC-15704	B71-10140 07	M-FS-20826
B70-10723 08	LEWIS-11174	B71-10071 01	M-FS-14655	B71-10141 02	MSC-13729
B70-10724 01	LANGLEY-10740	B71-10072 07	M-FS-20860	B71-10142 01	ERC-10125
B70-10725 06	LANGLEY-10778	B71-10073 08	GSFC-10008	B71-10143 03	ARC-10356
B70-10726 03	NPO-11454		GSFC-10009	B71-10144 03	ARC-10378
B70-10728 07	LANGLEY-10184		GSFC-10010		ARC-10389
B71-10001 02	KSC-10526	B71-10074 06	LEWIS-10939		

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B71-10146 07	LEWIS-11178	B71-10222 07	LEWIS-11217	B71-10299 02	M-FS-20948
B71-10147 09	M-FS-15157	B71-10223 02	LEWIS-11280		M-FS-20952
B71-10148 02	M-FS-20734	B71-10224 02	M-FS-12078	B71-10300 04	M-FS-20883
B71-10149 04	MSC-13530	B71-10225 04	M-FS-18831	B71-10301 07	MSC-12419
B71-10150 06	M-FS-16750	B71-10226 02	M-FS-20849	B71-10302 07	MSC-12427
B71-10151 09	M-FS-14654	B71-10227 06	M-FS-21166	B71-10303 04	M-FS-14947
B71-10152 07	M-FS-21139	B71-10228 02	M-FS-18808	B71-10304 01	MSC-13697
B71-10153 09	LEWIS-11382	B71-10229 04	ARC-10186	B71-10306 09	MSC-13858
B71-10154 04	NPO-12061	B71-10230 02	ARC-10269	B71-10307 02	NPO-11132
B71-10155 09	LEWIS-11190	B71-10231 01	ARC-10316	B71-10308 09	NPO-11687
B71-10156 06	M-FS-21350	B71-10232 03	M-FS-21225	B71-10309 01	M-FS-18693
B71-10157 03	NPO-11542	B71-10233 07	ARC-10131	B71-10310 04	M-FS-20458
B71-10158 04	NPO-11602	B71-10234 01	ARC-10132	B71-10311 03	NPO-10828
B71-10159 07	NPO-10797	B71-10235 03	XAC-05695	B71-10312 05	GSFC-10972
B71-10160 03	NPO-11519	B71-10236 03	GSFC-11133	B71-10313 01	GSFC-11050
B71-10161 04	NPO-11605	B71-10237 07	M-FS-16927	B71-10314 09	GSFC-11306
B71-10162 01	ARC-10070	B71-10238 09	M-FS-20600	B71-10315 07	NPO-12003
B71-10163 05	ARC-10201	B71-10239 07	M-FS-20852	B71-10316 05	MSC-12447
B71-10164 02	ARC-10214	B71-10240 09	M-FS-20874	B71-10317 04	MSC-13732
B71-10165 04	ARC-10215	B71-10241 05	M-FS-21010	B71-10318 02	MSC-13855
B71-10166 03	ARC-10332	B71-10242 01	M-FS-21096	B71-10319 04	MSC-17211
B71-10167 05	MSC-12393	B71-10243 09	NPO-11547	B71-10320 04	MSC-17332
B71-10168 08	M-FS-21224	B71-10244 09	NPO-11551	B71-10321 09	LEWIS-11349
B71-10169 02	KSC-10521	B71-10245 04	M-FS-20946	B71-10322 01	GSFC-10517
B71-10170 01	KSC-10162	B71-10246 02	KSC-10546	B71-10323 01	KSC-10384
B71-10171 01	ARC-10078	B71-10247 08	LANGLEY-10812	B71-10324 02	GSFC-11237
B71-10172 04	HQ-10670	B71-10248 09	NPO-11643	B71-10325 02	MSC-12404
B71-10173 07	LEWIS-11152	B71-10249 03	XAC-01670	B71-10326 02	MSC-13857
B71-10174 01	LEWIS-11319	B71-10250 09	NPO-11580	B71-10327 06	MSC-15317
B71-10175 07	SAN-10050	B71-10251 02	LEWIS-11238	B71-10328 07	MSC-17348
B71-10176 02	SAN-10051	B71-10252 03	M-FS-20642	B71-10329 05	MSC-13227
B71-10177 01	ARC-10200	B71-10253 08	M-FS-20909	B71-10330 05	MSC-13543
B71-10178 07	XLA-07391	B71-10254 06	M-FS-20895		MSC-13544
B71-10179 01	LEWIS-11228	B71-10255 04	ARC-10393	B71-10331 04	MSC-13695
B71-10180 03	M-FS-14706	B71-10256 08	GSFC-11163	B71-10332 05	MSC-13827
B71-10181 09	M-FS-15066	B71-10257 08	LEWIS-11328	B71-10333 03	LANGLEY-10614
B71-10182 01	M-FS-20402	B71-10258 02	KSC-10661	B71-10334 01	LANGLEY-10630
B71-10183 06	M-FS-20522	B71-10259 04	MSC-13540	B71-10335 03	LANGLEY-10660
B71-10184 04	NPO-10998	B71-10260 03	GSFC-10945	B71-10336 08	LANGLEY-10755
	NPO-10999	B71-10261 04	LEWIS-11261	B71-10337 06	LANGLEY-10885
B71-10185 09	NPO-11555	B71-10262 03	LEWIS-11289	B71-10338 08	M-FS-21251
B71-10186 09	M-FS-20536	B71-10263 02	MSC-13746	B71-10339 04	M-FS-21363
B71-10187 06	NPO-11337	B71-10264 03	LEWIS-11162	B71-10340 03	M-FS-21364
B71-10188 06	NPO-11617	B71-10265 03	ARC-10391	B71-10341 01	M-FS-24006
B71-10189 06	NPO-11618	B71-10266 06	GSFC-10737	B71-10342 04	LANGLEY-10776
B71-10190 01	XLA-11154	B71-10267 09	GSFC-11279	B71-10343 03	LANGLEY-10311
B71-10191 03	NPO-11427	B71-10268 08	LEWIS-11260	B71-10344 02	M-FS-21357
B71-10192 05	LRL-10011	B71-10269 03	M-FS-20542	B71-10345 01	GSFC-10894
B71-10193 01	M-FS-16709	B71-10270 06	M-FS-20564	B71-10346 01	GSFC-10993
B71-10194 06	M-FS-24015	B71-10271 06	M-FS-20850	B71-10347 01	GSFC-10994
B71-10195 04	M-FS-24017	B71-10272 03	KSC-10662	B71-10348 06	GSFC-11085
B71-10196 06	M-FS-24020	B71-10273 03	M-FS-20717	B71-10349 01	GSFC-10864
B71-10197 04	HQ-10591	B71-10274 01	M-FS-20902	B71-10350 03	M-FS-20971
B71-10198 04	GSFC-10072	B71-10275 01	M-FS-20891	B71-10351 03	M-FS-21024
B71-10199 08	LEWIS-11262	B71-10276 02	MSC-12428	B71-10352 03	M-FS-21050
B71-10200 05	XAC-2981	B71-10277 04	MSC-13733	B71-10353 03	M-FS-21074
B71-10201 01	ARC-10336	B71-10278 04	MSC-15734	B71-10354 08	M-FS-13568
B71-10202 05	XAC-8972	B71-10279 01	GSFC-10932	B71-10355 05	M-FS-20137
B71-10203 03	ARC-10246	B71-10280 08	KSC-10550	B71-10356 04	M-FS-20925
B71-10204 01	ARC-10064	B71-10281 06	NPO-11431	B71-10357 03	M-FS-20962
B71-10205 02	M-FS-20541	B71-10282 02	NPO-11475	B71-10358 07	M-FS-21111
B71-10206 08	M-FS-20943	B71-10283 03	XAC-05506	B71-10359 04	LEWIS-10985
B71-10207 07	M-FS-21138	B71-10284 09	ARC-10154	B71-10360 02	M-FS-20857
B71-10208 04	M-FS-21160	B71-10285 09	GSFC-10991	B71-10361 01	M-FS-21401
B71-10209 04	M-FS-21161	B71-10286 01	GSFC-11086	B71-10362 04	NPO-11688
B71-10210 04	NPO-10313	B71-10287 01	HQ-10597	B71-10363 08	M-FS-21354
B71-10211 09	HQ-10579	B71-10288 02	KSC-10385	B71-10364 03	KSC-10518
B71-10212 08	LEWIS-11239	B71-10289 04	NPO-12067	B71-10365 01	GSFC-11248
B71-10213 02	M-FS-16609	B71-10290 04	NPO-12068	B71-10366 02	M-FS-20587
B71-10214 07	M-FS-20750	B71-10291 04	NPO-10447	B71-10367 01	M-FS-20935
B71-10215 09	LEWIS-11294	B71-10292 01	NPO-10355	B71-10368 01	M-FS-20688
B71-10216 04	M-FS-20861	B71-10293 08	NPO-12026	B71-10369 08	LEWIS-11240
B71-10217 04	M-FS-21126	B71-10294 09	GSFC-11305	B71-10370 02	NPO-11365
B71-10218 02	M-FS-21080	B71-10295 09	MSC-13475	B71-10371 02	NPO-10388
B71-10219 07	LEWIS-11231	B71-10296 09	M-FS-21333	B71-10372 09	LEWIS-11347
B71-10220 02	GSFC-10895	B71-10297 04	M-FS-20534	B71-10373 09	LEWIS-11346
B71-10221 01	GSFC-11221	B71-10298 02	M-FS-20950	B71-10374 09	LEWIS-11293

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B71-10375 08	GSFC-10835	B71-10453 09	ARC-10210	B71-10535 09	LANGLEY-10989
B71-10376 09	M-FS-14804	B71-10454 03	ARC-10109	B71-10536 03	MSC-13332
B71-10377 09	M-FS-19040	B71-10455 08	LEWIS-11387	B72-10001 03	MSC-13980
B71-10378 03	M-FS-21345	B71-10456 09	GSFC-11393	B72-10002 04	LANGLEY-10941
B71-10379 01	M-FS-21009	B71-10457 08	M-FS-20112	B72-10003 03	AEC-10004
B71-10380 01	KSC-10557	B71-10458 08	M-FS-20113	B72-10004 03	AEC-10013
B71-10381 08	LEWIS-90255	B71-10459 08	M-FS-20114	B72-10005 04	MSC-13923-4
B71-10382 09	M-FS-21227	B71-10460 08	M-FS-20115	B72-10006 05	MSC-13906
B71-10383 03	M-FS-20589	B71-10461 08	M-FS-20117	B72-10007 01	NPO-10556
B71-10384 09	M-FS-21237	B71-10462 09	M-FS-20119	B72-10008 03	ARC-10484
B71-10385 03	M-FS-21247	B71-10463 09	GSFC-11422	B72-10009 06	ARC-10486
B71-10386 09	NPO-11849	B71-10464 08	GSFC-11494	B72-10010 06	ARC-10496
B71-10387 05	MSC-13573	B71-10465 08	M-FS-20118	B72-10011 06	ARC-10503
B71-10388 03	LEWIS-10814	B71-10466 05	M-FS-20119	B72-10012 06	ARC-10504
B71-10389 09	MSC-17487	B71-10467 08	M-FS-21415	B72-10013 06	ARC-10505
B71-10390 09	NPO-11798	B71-10468 07	M-FS-21435	B72-10014 01	ARC-10509
B71-10391 02	KSC-10654	B71-10469 01	ARC-10228	B72-10015 09	MSC-13977
B71-10392 09	LEWIS-10788	B71-10470 03	ARC-10259	B72-10016 03	MSC-13978
B71-10393 04	LEWIS-11297	B71-10471 01	ARC-10394	B72-10017 05	MSC-14003
B71-10394 04	LEWIS-11364	B71-10472 09	M-FS-16891	B72-10018 02	MSC-14005
B71-10395 03	LANGLEY-10667	B71-10473 09	NPO-10840	B72-10019 04	MSC-14032
B71-10397 06	LEWIS-11116	B71-10474 04	M-FS-24073	B72-10020 03	ARC-10471
B71-10398 09	LEWIS-10905	B71-10475 05	ARC-10427	B72-10021 01	ARC-10485
B71-10399 09	LEWIS-10893	B71-10476 05	LANGLEY-10623	B72-10022 06	ARC-10495
B71-10400 09	LEWIS-10998	B71-10477 05	ARC-10360	B72-10023 09	ARC-10498
B71-10401 09	NPO-11709	B71-10478 03	ARC-10362	B72-10024 06	ARC-10506
B71-10402 09	LEWIS-10977	B71-10479 07	ARC-10056	B72-10025 08	ARC-10511
B71-10403 04	LEWIS-11167	B71-10480 07	ARC-10444	B72-10026 03	ARC-10524
B71-10404 02	KSC-10589	B71-10481 07	ARC-10327	B72-10027 04	ARC-10528
B71-10405 06	LEWIS-11210	B71-10482 04	ARC-10429	B72-10028 04	ARC-10531
B71-10406 03	LEWIS-11235	B71-10483 04	M-FS-21077	B72-10029 04	ARC-10532
B71-10407 06	LEWIS-11001	B71-10484 03	M-FS-21393	B72-10030 02	MSC-12458
B71-10408 02	NPO-11487	B71-10485 05	M-FS-21423	B72-10031 05	MSC-13604
B71-10409 06	GSFC-10981	B71-10486 01	M-FS-21611	B72-10032 05	MSC-13609
B71-10410 02	GSFC-11046	B71-10487 05	M-FS-21121	B72-10033 03	MSC-13816
B71-10411 04	GSFC-11260	B71-10488 04	LANGLEY-10258	B72-10034 03	MSC-13965
B71-10412 07	GSFC-11028	B71-10489 04	M-FS-21387	B72-10035 05	XAC-08505
B71-10413 09	MSC-13995	B71-10490 09	LEWIS-11229	B72-10036 07	XAC-09489
B71-10414 09	MSC-17562	B71-10491 09	LEWIS-11403	B72-10037 06	XAC-10048
B71-10415 08	M-FS-20121	B71-10492 09	M-FS-21490	B72-10038 04	LEWIS-11047
B71-10416 08	M-FS-20234	B71-10493 07	M-FS-21627	B72-10039 03	AEC-10003
B71-10417 08	M-FS-20123	B71-10494 03	LANGLEY-10841	B72-10040 06	ARC-10312
B71-10418 08	M-FS-20128	B71-10495 05	MSC-12363	B72-10041 08	ARC-10311
B71-10419 08	M-FS-20142	B71-10496 07	MSC-13920	B72-10042 01	NPO-11368
B71-10420 08	M-FS-20237	B71-10497 01	MSC-17361	B72-10043 01	NPO-11562
B71-10421 08	M-FS-20236	B71-10498 01	ARC-10025	B72-10044 04	AEC-10010
B71-10422 08	M-FS-20116	B71-10499 09	ARC-10254	B72-10045 01	ARC-10041
B71-10423 09	M-FS-21610	B71-10500 09	GSFC-11384	B72-10046 05	ARC-10100
B71-10424 09	M-FS-21386	B71-10501 09	GSFC-11408	B72-10047 01	ARC-10137
B71-10425 03	NPO-11466	B71-10502 02	LANGLEY-11013	B72-10048 03	ARC-10173
B71-10426 01	ARC-10136	B71-10503 07	GSFC-11004	B72-10049 06	ARC-10219
B71-10427 03	ARC-10175	B71-10504 02	HQ-10638	B72-10050 02	ARC-10238
B71-10428 01	M-FS-14778	B71-10505 08	MSC-13932	B72-10051 02	ARC-10252
B71-10429 01	M-FS-14916	B71-10506 03	LANGLEY-10712	B72-10052 02	ARC-10255
B71-10430 06	M-FS-18793	B71-10507 06	MSC-13613	B72-10053 03	ARC-10274
B71-10431 09	M-FS-21477	B71-10508 09	M-FS-20786	B72-10054 01	ARC-10292
B71-10432 03	M-FS-21268	B71-10509 09	LEWIS-10894	B72-10055 01	ARC-10294
B71-10433 08	M-FS-21131	B71-10510 07	LEWIS-11511	B72-10056 01	ARC-10330
B71-10434 04	M-FS-20162	B71-10511 07	MSC-12432	B72-10057 01	ARC-10348
B71-10435 08	M-FS-18867	B71-10512 08	M-FS-15162	B72-10058 08	ARC-10374
B71-10436 03	M-FS-18817	B71-10513 06	MSC-13515	B72-10059 01	ARC-10404
B71-10437 04	M-FS-20776	B71-10514 06	MSC-13516	B72-10060 01	ARC-10405
B71-10438 01	M-FS-20723		MSC-13517	B72-10061 05	ARC-10411
B71-10439 02	M-FS-20546	B71-10516 07	MSC-17183	B72-10062 05	ARC-10415
B71-10440 02	ARC-10088	B71-10517 02	MSC-17139	B72-10063 04	ARC-10459
B71-10441 09	M-FS-21432	B71-10519 03	M-FS-21424	B72-10064 09	ARC-10615
B71-10442 04	LEWIS-11325	B71-10520 08	LEWIS-11388	B72-10065 09	ARC-10616
B71-10443 04	ARC-10314	B71-10521 05	MSC-14002	B72-10066 07	LANGLEY-11202
B71-10444 02	GSFC-11023	B71-10522 07	MSC-13508	B72-10067 09	LANGLEY-11048
B71-10445 02	ARC-10084	B71-10523 08	MSC-13860	B72-10068 09	LANGLEY-11049
B71-10446 06	NPO-12049	B71-10525 08	ARC-10337	B72-10069 09	LEWIS-11368
B71-10447 09	MSC-17017	B71-10526 03	ARC-10199	B72-10070 09	LEWIS-11636
B71-10448 09	MSC-17567	B71-10527 03	ARC-10417	B72-10071 09	MSC-17563
B71-10449 07	NPO-10808	B71-10528 06	ARC-10288	B72-10072 09	NPO-11892
B71-10450 01	MSC-12417	B71-10530 02	M-FS-21290	B72-10073 09	NPO-11943
B71-10451 02	NPO-11486	B71-10531 08	M-FS-21453	B72-10074 02	ARC-10250
B71-10452 01	ARC-10402	B71-10532 09	NPO-11800	B72-10075 06	MSC-15703
		B71-10534 03	ARC-10341		

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B72-10076 02	MSC-17457	B72-10153 09	LANGLEY-10932	B72-10229 05	LEWIS-11095
B72-10077 01	NPO-11165		LANGLEY-10935	B72-10230 04	LANGLEY-10514
B72-10078 06	NPO-11287	B72-10154 03	M-FS-20213	B72-10231 04	AEC-10083
B72-10079 01	NPO-11339	B72-10155 01	NPO-11627	B72-10232 03	AEC-10090
B72-10080 01	NPO-11341	B72-10156 01	M-FS-20933	B72-10233 05	AEC-10048
B72-10081 08	NPO-11348	B72-10157 04	M-FS-21288	B72-10234 04	AEC-10070
B72-10082 03	NPO-11349	B72-10158 06	M-FS-21498	B72-10235 04	AEC-10053
B72-10083 03	NPO-11367	B72-10159 01	NPO-11639	B72-10236 01	AEC-10060
B72-10084 06	NPO-11402	B72-10160 03	ARC-10384	B72-10237 08	AEC-10080
B72-10085 03	NPO-11403	B72-10161 04	ARC-10410	B72-10238 08	AEC-10051
B72-10086 02	NPO-11404	B72-10162 06	ARC-10474	B72-10239 06	AEC-10044
B72-10087 03	NPO-11405	B72-10163 06	ARC-10480	B72-10240 03	AEC-10042
B72-10088 02	NPO-11421	B72-10164 02	ARC-10481	B72-10241 06	NPO-11738
B72-10089 02	NPO-11457	B72-10165 01	ARC-10489	B72-10242 03	NPO-11885
B72-10090 04	NPO-11464	B72-10166 03	ARC-10521	B72-10243 05	NPO-11346
B72-10091 02	NPO-11482	B72-10167 02	ARC-10527	B72-10244 03	NPO-11322
B72-10092 01	NPO-11502	B72-10168 05	ARC-10546	B72-10245 01	NPO-11401
B72-10093 06	NPO-11503	B72-10169 03	ARC-10460	B72-10246 03	ARC-10244
B72-10094 02	NPO-11518	B72-10170 03	XAC-10768	B72-10247 04	ARC-10568
B72-10095 07	NPO-11524	B72-10171 03	ARC-10448	B72-10248 03	ARC-10569
B72-10096 01	NPO-11527	B72-10172 04	HQ-10690	B72-10249 04	ARC-10574
B72-10097 06	NPO-11544	B72-10173 07	ARC-10155	B72-10250 06	ARC-10582
B72-10098 02	NPO-11545	B72-10174 07	MSC-13850	B72-10251 03	ARC-10601
B72-10099 02	NPO-11560	B72-10175 04	LEWIS-11323	B72-10252 08	ARC-10612
B72-10100 01	NPO-11561	B72-10176 01	LEWIS-11471	B72-10253 09	LEWIS-10482
B72-10101 02	NPO-11567	B72-10177 02	LEWIS-11069	B72-10254 02	M-FS-21553
B72-10102 01	GSFC-11239	B72-10178 07	LEWIS-11593	B72-10255 01	ARC-10708
B72-10103 01	M-FS-13754	B72-10179 07	ARC-10413	B72-10256 04	LEWIS-11267
B72-10104 06	M-FS-16326	B72-10180 03	ARC-10523	B72-10257 04	HQ-10698
B72-10105 06	M-FS-18401	B72-10181 01	LEWIS-11401	B72-10258 06	NUC-11019
B72-10106 01	M-FS-20915	B72-10182 09	MSC-13864	B72-10259 03	LEWIS-11192
B72-10107 03	M-FS-21246	B72-10183 06	LEWIS-11466	B72-10260 03	M-FS-20074
B72-10108 02	M-FS-21291	B72-10184 01	ARC-10387	B72-10261 09	MSC-13993
B72-10109 02	M-FS-21326	B72-10185 01	NPO-11663	B72-10262 04	M-FS-21325
B72-10110 07	M-FS-21377	B72-10186 01	NPO-11847	B72-10263 03	M-FS-21416
B72-10111 09	LEWIS-11097	B72-10187 04	M-FS-21560	B72-10264 07	M-FS-21495
B72-10112 01	M-FS-21277	B72-10188 03	ARC-10198	B72-10265 09	M-FS-21531
B72-10113 03	GSFC-10995	B72-10189 05	ARC-10399	B72-10266 04	M-FS-21668
B72-10114 07	LEWIS-11598	B72-10190 03	ARC-10468	B72-10267 09	M-FS-21711
B72-10115 04	LANGLEY-10940	B72-10191 02	ARC-10007	B72-10268 01	ARC-10073
B72-10116 01	NPO-11306	B72-10192 03	ARC-10148	B72-10269 04	ARC-10280
B72-10117 07	MSC-15953	B72-10193 05	ARC-10181	B72-10270 03	ARC-10449
B72-10118 07	MSC-15818	B72-10194 05	ARC-10245	B72-10272 02	ARC-10562
B72-10119 02	ARC-10197	B72-10195 05	ARC-10247	B72-10273 03	ARC-10487
B72-10120 07	ARC-10239	B72-10196 03	ARC-10263	B72-10274 03	ARC-10278
B72-10121 06	ARC-10295	B72-10197 07	ARC-10303	B72-10275 01	ARC-10583
B72-10122 07	ARC-10345	B72-10198 03	ARC-10308	B72-10276 03	ARC-10558
B72-10123 03	ARC-10375	B72-10199 04	ARC-10319	B72-10277 03	ARC-10559
B72-10124 01	ARC-10412	B72-10200 05	ARC-10406	B72-10278 03	ARC-10560
B72-10125 05	ARC-10423	B72-10201 04	ARC-10493	B72-10279 05	XAC-01547
B72-10126 05	ARC-10447	B72-10202 03	ARC-10320	B72-10280 04	GSFC-11358
B72-10127 03	ARC-10492	B72-10203 05	ARC-10329	B72-10281 05	MSC-13917
B72-10128 03	ARC-10516	B72-10204 06	ARC-10338	B72-10282 04	LEWIS-11015
B72-10129 04	GSFC-11253	B72-10205 05	ARC-10351	B72-10283 07	KSC-10513
B72-10130 03	LEWIS-11533	B72-10206 03	ARC-10370	B72-10284 04	MSC-17668
B72-10131 02	M-FS-21609	B72-10207 03	ARC-10403	B72-10285 02	MSC-14053
B72-10132 03	GSFC-11283	B72-10208 03	ARC-10408	B72-10286 02	LEWIS-11498
B72-10133 06	LEWIS-11290	B72-10209 03	ARC-10422	B72-10287 07	M-FS-21513
B72-10134 01	LEWIS-11327	B72-10210 06	ARC-10426	B72-10288 08	LEWIS-11514
B72-10135 06	LEWIS-11345	B72-10211 07	ARC-10428	B72-10289 06	GSFC-11387
B72-10136 04	LEWIS-11483	B72-10212 03	ARC-10438	B72-10290 04	LEWIS-11479
B72-10137 04	LEWIS-11638	B72-10213 06	ARC-10456	B72-10291 04	GSFC-11304
B72-10138 01	NPO-11388	B72-10214 09	ARC-10490	B72-10292 07	LEWIS-11503
B72-10139 02	M-FS-20839	B72-10215 04	ARC-10529	B72-10293 08	M-FS-21928
B72-10140 03	M-FS-20814	B72-10216 07	MSC-13700	B72-10294 04	M-FS-21691
B72-10141 02	M-FS-21289	B72-10217 03	ARC-10554	B72-10295 02	KSC-10702
B72-10142 09	M-FS-21537	B72-10218 01	ARC-10467	B72-10296 02	ARC-10176
B72-10143 03	M-FS-21637	B72-10219 05	ARC-10248	B72-10297 05	ARC-10275
B72-10144 04	LEWIS-11495	B72-10220 05	ARC-10488	B72-10298 05	ARC-10302
B72-10145 01	LEWIS-11487	B72-10221 03	ARC-10491	B72-10299 09	ARC-10430
B72-10146 03	AEC-10007	B72-10222 09	ARC-10522	B72-10300 04	ARC-10464
B72-10147 03	M-FS-21613	B72-10223 04	ARC-10553	B72-10301 05	ARC-10514
B72-10148 03	ARC-10164	B72-10224 05	XAC-05422	B72-10302 03	ARC-10533
B72-10149 01	M-FS-21626	B72-10225 09	LEWIS-11493	B72-10303 05	ARC-10555
B72-10150 04	LEWIS-11473	B72-10226 01	NPO-10351	B72-10304 01	ARC-10556
B72-10151 03	LEWIS-11354	B72-10227 03	LEWIS-11159	B72-10305 04	ARC-10584
B72-10152 03	M-FS-20941	B72-10228 06	NUC-11020	B72-10306 04	ARC-10594

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B72-10307 03	ARC-10602	B72-10382 04	LEWIS-11592	B72-10458 09	HQ-10306
B72-10308 01	ARC-10603	B72-10383 02	LEWIS-11678	B72-10459 07	M-FS-21650
B72-10309 04	ARC-10646	B72-10384 07	LEWIS-11642	B72-10460 03	M-FS-22092
B72-10310 03	ARC-10653	B72-10385 07	LEWIS-11595	B72-10461 05	MSC-14123
B72-10311 09	LRL-10034	B72-10386 04	M-FS-21571	B72-10462 01	GSFC-11051
B72-10312 03	LRL-10024	B72-10387 03	GSFC-11244	B72-10463 01	LEWIS-11494
B72-10313 04	M-FS-20711	B72-10388 03	GSFC-11082	B72-10464 04	M-FS-22064
B72-10314 03	LRL-10031	B72-10389 03	HQ-10541	B72-10465 03	HQ-10727
B72-10315 01	NPO-11563	B72-10390 02	MSC-13880	B72-10466 06	M-FS-21618
B72-10316 01	M-FS-21924	B72-10391 05	MSC-14126	B72-10467 02	M-FS-21576
B72-10317 03	M-FS-21724		MSC-14127	B72-10468 02	M-FS-22024
B72-10318 04	M-FS-21410	B72-10392 02	M-FS-21344	B72-10469 04	M-FS-22119
B72-10319 07	M-FS-21469	B72-10393 01	M-FS-21964	B72-10470 07	M-FS-21735
B72-10320 04	M-FS-21267	B72-10394 08	M-FS-19113	B72-10471 02	GSFC-10525
B72-10321 04	M-FS-21113	B72-10395 05	LANGLEY-11069	B72-10472 03	GSFC-11200
B72-10322 07	M-FS-21612	B72-10396 04	GSFC-11216	B72-10473 04	LANGLEY-10423
B72-10323 06	M-FS-21567	B72-10397 04	LEWIS-11657	B72-10474 01	M-FS-22090
B72-10324 03	M-FS-21575	B72-10398 07	NPO-11416	B72-10475 07	LRL-10025
B72-10325 07	M-FS-21556	B72-10399 06	M-FS-20955	B72-10476 06	M-FS-21930
B72-10326 07	LEWIS-11417	B72-10400 07	M-FS-16097	B72-10477 01	LEWIS-11465
B72-10327 03	HQ-10683	B72-10401 04	M-FS-24010	B72-10478 03	LEWIS-11513
B72-10328 04	LANGLEY-10681	B72-10402 05	M-FS-20835	B72-10479 01	LEWIS-11619
B72-10329 07	M-FS-21374	B72-10403 06	LEWIS-11499	B72-10480 01	LEWIS-11549
B72-10330 06	LEWIS-11574	B72-10404 07	M-FS-21716	B72-10481 02	HQ-10695
B72-10331 06	LEWIS-11535	B72-10405 09	LEWIS-11237	B72-10482 05	HQ-10664
B72-10332 07	MSC-12282	B72-10406 04	LEWIS-10941	B72-10483 09	LEWIS-11110
B72-10333 04	M-FS-20984	B72-10407 06	M-FS-19004	B72-10484 07	LEWIS-11572
B72-10334 05	MSC-13036	B72-10408 06	M-FS-21597	B72-10485 03	M-FS-21593
B72-10335 09	MSC-17694	B72-10409 02	M-FS-21165	B72-10486 09	M-FS-21652
B72-10336 04	M-FS-20892	B72-10410 09	M-FS-21614	B72-10487 03	M-FS-21441
B72-10337 04	MSC-13499	B72-10411 02	MSC-13814	B72-10488 06	M-FS-18178
B72-10338 06	MSC-17738	B72-10412 04	ARC-10655	B72-10489 06	LEWIS-11705
B72-10339 04	LANGLEY-10930	B72-10413 04	ARC-10659	B72-10490 06	GSFC-11445
B72-10340 04	LANGLEY-10203	B72-10414 07	ARC-10660	B72-10491 04	LEWIS-11380
B72-10341 03	NPO-11554	B72-10415 05	ARC-10661	B72-10492 01	NPO-10034
B72-10342 04	M-FS-20848	B72-10416 04	ARC-10525	B72-10493 04	M-FS-21539
	M-FS-20979	B72-10417 02	ARC-10557	B72-10494 06	M-FS-21877
	M-FS-21039	B72-10418 04	ARC-10566	B72-10495 03	HQ-10371
B72-10343 04	LRL-10033	B72-10419 04	ARC-10567	B72-10496 06	MSC-12548
B72-10344 04	LEWIS-11634	B72-10420 04	ARC-10570	B72-10497 07	GSFC-11255
B72-10345 07	LRL-10032	B72-10421 04	ARC-10571	B72-10498 07	M-FS-15218
B72-10346 04	M-FS-16848	B72-10422 04	ARC-10572	B72-10499 07	M-FS-22012
B72-10347 01	M-FS-20407	B72-10423 04	ARC-10613	B72-10500 03	LRL-10028
B72-10348 07	M-FS-20692	B72-10424 04	ARC-10677	B72-10501 02	MSC-14117
B72-10349 08	ARC-10658	B72-10425 04	NPO-11859	B72-10502 06	NPO-12004
B72-10350 09	M-FS-21128	B72-10426 07	NPO-11815	B72-10503 04	LEWIS-11486
B72-10351 03	M-FS-21704	B72-10427 08	AEC-10018	B72-10504 09	LANGLEY-11109
B72-10352 07	M-FS-21675	B72-10428 08	AEC-10019	B72-10505 01	M-FS-21486
B72-10353 04	M-FS-21916	B72-10429 05	AEC-10049	B72-10506 01	LEWIS-11552
B72-10354 03	M-FS-21742	B72-10430 04	AEC-10017	B72-10507 02	NPO-11407
B72-10355 07	M-FS-21488	B72-10431 04	AEC-10085	B72-10508 02	NPO-11573
B72-10356 08	LANGLEY-10782	B72-10432 08	ARC-10682	B72-10509 07	KSC-10708
B72-10357 02	M-FS-21693	B72-10433 07	KSC-10770	B72-10510 02	MSC-17526
B72-10358 04	M-FS-21232	B72-10434 07	LEWIS-11512	B72-10511 04	LEWIS-11647
B72-10359 08	LEWIS-11724	B72-10435 03	MSC-14118	B72-10512 05	LEWIS-11581
B72-10360 03	M-FS-21129	B72-10436 06	GSFC-11323	B72-10513 08	LEWIS-11553
B72-10361 02	M-FS-21070	B72-10437 06	LEWIS-11680	B72-10514 04	LEWIS-10436
B72-10362 09	LEWIS-11534	B72-10438 04	HQ-10685	B72-10515 04	LEWIS-11072
B72-10363 01	M-FS-14741	B72-10439 04	LEWIS-11639	B72-10516 03	HQ-10645
B72-10364 04	AEC-10088	B72-10440 03	GSFC-11403	B72-10517 04	HQ-10674
B72-10365 04	AEC-10046	B72-10441 06	M-FS-24119	B72-10518 01	HQ-10783
B72-10366 04	AEC-10062	B72-10442 02	M-FS-20658	B72-10519 04	HQ-10706
B72-10367 04	AEC-10026	B72-10443 03	LEWIS-11609	B72-10520 03	HQ-10715
B72-10368 03	AEC-10036	B72-10444 09	LEWIS-10679	B72-10521 03	HQ-10720
B72-10369 01	AEC-10039	B72-10445 08	MSC-14024	B72-10522 05	HQ-10741
B72-10370 01	AEC-10068	B72-10446 06	MSC-14088	B72-10523 01	HQ-10790
B72-10371 05	AEC-10011	B72-10447 07	LEWIS-11274	B72-10524 03	HQ-10752
B72-10372 02	AEC-10077	B72-10448 02	M-FS-14952	B72-10525 05	HQ-10660
B72-10373 03	AEC-10079	B72-10449 04	MSC-17185	B72-10526 05	HQ-10582
B72-10374 08	LANGLEY-10486	B72-10450 05	M-FS-20994	B72-10527 01	HQ-10696
B72-10375 03	LANGLEY-10896	B72-10451 04	ARC-10135	B72-10528 04	HQ-10754
B72-10376 01	KSC-10704	B72-10452 01	ARC-10450	B72-10529 04	HQ-10580
B72-10377 07	LEWIS-11658	B72-10453 01	MSC-17324	B72-10530 01	HQ-10687
B72-10378 04	LEWIS-10982	B72-10454 04	LEWIS-10800	B72-10531 05	HQ-10767
B72-10379 03	LEWIS-11469	B72-10455 01	LANGLEY-10804	B72-10532 03	HQ-10788
B72-10380 06	M-FS-21848	B72-10456 04	LEWIS-10965	B72-10533 05	LANGLEY-11138
B72-10381 06	M-FS-24109	B72-10457 08	M-FS-21606	B72-10534 08	HQ-10712

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B72-10535 02	M-FS-21664	B72-10611 03	LANGLEY-10385	B72-10688 07	M-FS-16319
B72-10536 07	KSC-10707	B72-10612 04	M-FS-21630	B72-10689 06	M-FS-21911
B72-10537 07	LEWIS-11283	B72-10613 06	M-FS-21847	B72-10690 05	MSC-14151
B72-10538 07	MSC-17745	B72-10614 09	M-FS-18859	B72-10691 01	ARC-10364
B72-10539 07	MSC-14121	B72-10615 06	M-FS-21927	B72-10692 06	ARC-10519
B72-10540 06	KSC-10304	B72-10616 08	MSC-14247	B72-10693 06	ARC-10621
B72-10541 02	KSC-10723	B72-10617 05	M-FS-21573	B72-10694 02	NPO-11708
B72-10542 07	MSC-14120	B72-10618 09	LANGLEY-11047	B72-10695 05	ARC-10597
B72-10543 06	LANGLEY-11139	B72-10620 09	GSFC-11308	B72-10696 01	M-FS-22264
B72-10544 04	MSC-14138	B72-10621 09	M-FS-21955	B72-10697 01	M-FS-22044
B72-10545 02	MSC-14084	B72-10622 09	M-FS-21965	B72-10698 05	M-FS-21926
B72-10546 06	LEWIS-11270	B72-10623 09	NPO-11973	B72-10699 03	ARC-10723
B72-10547 05	LANGLEY-11054	B72-10624 09	M-FS-21991	B72-10700 03	NPO-11387
B72-10548 02	LANGLEY-10511	B72-10625 09	MSC-17619	B72-10701 03	NPO-11432
B72-10549 03	ARC-10656	B72-10626 06	LEWIS-11234	B72-10702 03	NPO-11689
B72-10550 04	ARC-10680	B72-10627 04	LEWIS-11823	B72-10703 03	NPO-10117
B72-10551 04	NPO-12028	B72-10628 04	LEWIS-11864	B72-10704 06	NPO-11658
B72-10552 06	NPO-12029	B72-10629 03	LEWIS-11632	B72-10705 01	NPO-11592
B72-10553 04	NPO-10714	B72-10630 05	LEWIS-11755	B72-10706 03	NPO-11479
B72-10554 03	NPO-10619	B72-10631 06	LEWIS-11851	B72-10707 03	NPO-11725
B72-10555 01	NPO-11499	B72-10632 05	LEWIS-11751	B72-10708 05	NPO-11934
B72-10556 03	NPO-11852	B72-10633 04	LEWIS-11835	B72-10709 04	ARC-10592
B72-10557 05	ARC-10024	B72-10634 09	LEWIS-11693	B72-10710 04	ARC-10696
B72-10558 06	ARC-10153	B72-10635 08	LEWIS-11824	B72-10711 04	NPO-11139
B72-10559 05	ARC-10550	B72-10636 06	KSC-10618	B72-10712 06	NPO-10671
B72-10560 04	ARC-10563	B72-10637 05	LANGLEY-11074	B72-10713 06	NPO-11330
B72-10561 01	ARC-10593	B72-10638 08	M-FS-22003	B72-10714 06	NPO-11366
B72-10562 08	MSC-17713	B72-10639 02	M-FS-21720	B72-10715 06	LEWIS-11826
B72-10563 03	ARC-10598	B72-10640 07	M-FS-20205	B72-10716 06	LEWIS-11775
B72-10564 02	ARC-10600	B72-10641 05	LANGLEY-10102	B72-10717 04	LEWIS-11840
B72-10565 04	ARC-10647	B72-10642 05	MSC-13648	B72-10718 09	LEWIS-11714
B72-10566 04	ARC-10648	B72-10643 01	M-FS-21915		LEWIS-11740
B72-10567 03	ARC-10651	B72-10644 08	M-FS-21558	B72-10719 01	GSFC-11061
B72-10568 09	ARC-10657	B72-10645 07	M-FS-21822	B72-10720 03	M-FS-22062
B72-10569 07	ARC-10679	B72-10646 01	M-FS-22118	B72-10721 09	MSC-11653
B72-10570 04	ARC-10686	B72-10647 02	GSFC-10901	B72-10722 06	MSC-17930
B72-10571 03	ARC-10687	B72-10648 09	M-FS-20744	B72-10723 06	NPO-11417
B72-10572 03	ARC-10694	B72-10649 08	GSFC-10913	B72-10724 02	NPO-11494
B72-10573 02	MSC-14070	B72-10650 09	GSFC-11612	B72-10725 04	LANGLEY-11027
B72-10574 07	GSFC-10566	B72-10651 06	HQ-10302	B72-10726 09	LEWIS-11708
B72-10575 07	M-FS-20111	B72-10652 05	HQ-10628	B72-10727 03	LEWIS-11617
B72-10576 06	M-FS-21788	B72-10653 05	HQ-10662	B72-10728 04	LEWIS-11665
B72-10577 09	LEWIS-11529	B72-10654 03	HQ-10688	B72-10729 01	MSC-12395
B72-10578 01	KSC-10668	B72-10655 03	HQ-10701	B72-10730 05	M-FS-14133
B72-10579 05	LEWIS-11761	B72-10656 09	HQ-10709	B72-10731 01	LANGLEY-11012
B72-10580 04	LEWIS-11467	B72-10657 05	HQ-10766	B72-10732 05	MSC-14234
B72-10581 06	LEWIS-11615	B72-10658 05	HQ-10776	B72-10733 06	MSC-14245
B72-10582 09	LEWIS-11808	B72-10659 05	HQ-10777	B72-10734 08	MSC-14198
B72-10583 04	LEWIS-11785	B72-10660 05	HQ-10778	B72-10735 01	MSC-17827
B72-10584 09	LEWIS-11679	B72-10661 05	HQ-10779	B72-10736 09	MSC-13805
B72-10585 09	LEWIS-11651	B72-10662 03	HQ-10798	B72-10737 01	LEWIS-11698
B72-10586 09	LEWIS-11635	B72-10663 06	LANGLEY-11071	B72-10738 06	LEWIS-11649
B72-10587 04	LEWIS-11754	B72-10664 02	M-FS-14478	B72-10739 09	LEWIS-11722
B72-10588 05	M-FS-21883	B72-10665 03	M-FS-21212	B72-10740 04	M-FS-22280
B72-10589 09	M-FS-21831	B72-10666 04	M-FS-21674	B72-10741 01	LANGLEY-11210
B72-10590 06	MSC-14087	B72-10667 09	M-FS-21751	B72-10742 04	LEWIS-11652
B72-10591 02	HQ-10723	B72-10668 02	M-FS-22117	B72-10743 06	NPO-11603
B72-10592 04	M-FS-21266	B72-10669 06	M-FS-21846	B72-10744 08	LANGLEY-10801
B72-10593 08	LEWIS-11741	B72-10670 03	HQ-10663	B72-10745 08	LEWIS-11268
B72-10594 04	M-FS-21233	B72-10671 09	HQ-10743	B72-10746 04	HQ-10714
B72-10595 08	M-FS-21448	B72-10672 07	LEWIS-11602	B72-10747 09	NPO-11960
B72-10596 04	M-FS-21932	B72-10673 01	LEWIS-11804	B72-10748 06	HQ-10761
B72-10597 07	M-FS-21361	B72-10674 09	GSFC-11597	B72-10749 06	LANGLEY-11068
B72-10598 06	M-FS-21262	B72-10675 09	GSFC-11523	B72-10750 09	MSC-14161
B72-10599 09	GSFC-10909	B72-10676 09	M-FS-21880	B72-10751 02	GSFC-11087
B72-10600 09	GSFC-11499	B72-10677 06	MSC-17848	B72-10752 02	LEWIS-11898
B72-10601 09	M-FS-21414	B72-10678 07	M-FS-16863	B72-10753 09	LEWIS-11863
B72-10602 09	M-FS-21466	B72-10679 06	M-FS-24221	B72-10754 08	LEWIS-11259
B72-10603 06	M-FS-21774	B72-10680 02	M-FS-22043	B72-10755 01	HQ-10745
B72-10604 09	GSFC-11576	B72-10681 07	LEWIS-11813	B72-10756 05	MSC-13999
B72-10605 09	MSC-14016	B72-10682 02	M-FS-21671	B73-10001 07	LEWIS-11035
B72-10606 09	GSFC-11397	B72-10683 08	LANGLEY-11072	B73-10002 04	LEWIS-11509
B72-10607 09	LANGLEY-11124	B72-10684 04	LEWIS-11750	B73-10003 08	LEWIS-11802
B72-10608 09	GSFC-11526	B72-10685 07	KSC-10768	B73-10004 01	LEWIS-11849
	GSFC-11539	B72-10686 06	LEWIS-11814	B73-10005 08	LEWIS-11852
B72-10609 02	NPO-11634	B72-10687 07	M-FS-21731	B73-10006 02	LEWIS-11872
B72-10610 09	GSFC-11505			B73-10007 04	LEWIS-11924

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

873-10008 07	LEWIS-11940	873-10085 04	JSC-14336	873-10160 01	LANGLEY-11282
873-10009 03	LEWIS-11944	873-10086 03	JSC-17959	873-10161 02	M-FS-21433
873-10010 02	LEWIS-11704	873-10087 09	NPO-13188	873-10162 09	GSFC-11512
873-10011 02	LEWIS-11903	873-10088 09	NPO-13213		GSFC-11515
873-10012 09	LEWIS-11438	873-10089 05	M-FS-22159	873-10163 03	M-FS-24171
873-10013 08	LEWIS-11169	873-10090 04	M-FS-22054	873-10164 01	LEWIS-11735
873-10014 04	LEWIS-11879	873-10091 09	LANGLEY-11184	873-10165 09	NPO-11491
873-10015 01	LEWIS-11822	873-10092 05	JSC-14149	873-10166 09	M-FS-22532
873-10016 03	ARC-10339	873-10093 02	JSC-14065	873-10167 02	M-FS-22566
873-10017 03	ARC-10565		JSC-14066	873-10168 04	M-FS-22540
873-10018 03	ARC-10709	873-10094 02	JSC-14262	873-10169 02	M-FS-22123
873-10019 04	NPO-11440	873-10095 03	M-FS-22348	873-10170 02	M-FS-22135
873-10020 04	NPO-11586	873-10096 01	M-FS-22377	873-10171 01	LEWIS-12009
873-10021 04	NPO-11587	873-10097 01	M-FS-24271	873-10172 04	LEWIS-11953
873-10022 04	NPO-11647	873-10098 07	M-FS-22133	873-10173 02	JSC-14219
873-10023 06	NPO-11744	873-10099 05	M-FS-22403	873-10174 01	JSC-14240
873-10024 04	NPO-11747	873-10100 02	M-FS-21791	873-10175 03	GSFC-11509
873-10025 03	NPO-11749	873-10101 09	M-FS-21973	873-10176 03	KSC-10730
873-10026 06	NPO-11790	873-10102 04	JSC-14164	873-10177 05	JSC-14391
873-10027 03	LEWIS-11893		JSC-14166	873-10178 02	KSC-10698
873-10028 06	LEWIS-11959	873-10103 04	M-FS-22354	873-10179 01	LANGLEY-11284
873-10029 06	ARC-10441	873-10104 09	M-FS-22126	873-10180 04	LANGLEY-11211
873-10030 04	ARC-10469	873-10105 03	M-FS-21775	873-10181 03	GSFC-11406
873-10031 03	ARC-10689	873-10106 02	JSC-12494	873-10182 03	M-FS-22547
873-10032 08	ARC-10706	873-10107 02	JSC-12462	873-10183 06	LANGLEY-11250
873-10033 05	ARC-10691	873-10108 04	JSC-19107	873-10184 06	LANGLEY-11249
873-10034 06	NPO-11626	873-10109 01	M-FS-20936	873-10185 01	GSFC-11394
873-10035 01	NPO-11637	873-10110 07	KSC-10615	873-10186 09	M-FS-24172
873-10036 04	NPO-11730	873-10111 06	KSC-10126	873-10187 04	LEWIS-11962
873-10037 04	NPO-11731	873-10112 02	KSC-10182	873-10188 04	LEWIS-11963
873-10038 08	NPO-11900	873-10113 04	KSC-10198	873-10189 02	KSC-10750
873-10039 04	LEWIS-11985	873-10114 09	NPO-11805	873-10190 07	KSC-10639
873-10040 08	LEWIS-11395	873-10115 09	M-FS-21970	873-10191 02	KSC-10108
873-10041 06	JSC-17136	873-10116 03	M-FS-22279	873-10192 03	GSFC-11620
873-10042 06	LANGLEY-11258	873-10117 06	M-FS-21727	873-10193 07	LANGLEY-11266
873-10043 02	KSC-10728	873-10118 02	M-FS-22067	873-10194 04	LRL-10026
873-10044 04	LEWIS-11726	873-10119 02	LANGLEY-11030	873-10195 02	LEWIS-11941
873-10045 05	GSFC-11738	873-10120 09	M-FS-24324	873-10196 01	JSC-14136
873-10046 05	GSFC-11531	873-10121 04	JSC-14375	873-10197 01	M-FS-22505
873-10047 07	LANGLEY-10426	873-10122 02	GSFC-11262	873-10198 05	M-FS-22627
873-10048 05	LANGLEY-10927	873-10123 02	JSC-19157	873-10199 01	M-FS-22426
873-10049 09	JSC-17484	873-10124 07	LEWIS-11672	873-10200 06	LEWIS-11918
873-10050 03	M-FS-21692	873-10125 07	JSC-17420	873-10201 06	LANGLEY-11263
873-10051 02	M-FS-22350	873-10126 02	GSFC-11377	873-10202 02	M-FS-22296
873-10052 02	GSFC-11466	873-10127 02	M-FS-21660	873-10203 07	M-FS-21761
873-10053 09	KSC-10619	873-10128 06	GSFC-11600	873-10204 07	M-FS-22022
873-10054 01	M-FS-21310	873-10129 02	GSFC-11444	873-10205 06	LEWIS-11374
873-10055 01	M-FS-22493	873-10130 03	ARC-10702	873-10206 03	LEWIS-11610
873-10056 04	LANGLEY-11144	873-10131 03	NPO-11201	873-10207 06	JSC-14221
873-10057 06	JSC-12569	873-10132 02	NPO-11342	873-10208 04	GSFC-11697
873-10058 03	JSC-14170	873-10133 03	NPO-11369	873-10209 03	M-FS-24167
873-10059 06	M-FS-22016	873-10134 02	NPO-11512	873-10210 03	M-FS-21244
873-10060 04	M-FS-21397	873-10135 01	NPO-11569	873-10211 01	M-FS-22511
873-10061 06	M-FS-22168	873-10136 01	NPO-11570	873-10212 03	M-FS-24402
873-10062 04	M-FS-22326	873-10137 03	NPO-11608	873-10213 04	LEWIS-12007
873-10063 04	LEWIS-11984	873-10138 02	NPO-11612	873-10214 09	LEWIS-11878
873-10064 09	LEWIS-11926	873-10139 01	NPO-11616	873-10215 04	M-FS-22324
873-10065 09	LEWIS-11854	873-10140 03	NPO-11702	873-10216 07	M-FS-22266
873-10066 09	LEWIS-11815	873-10141 02	NPO-11707	873-10217 02	M-FS-22343
873-10067 09	KSC-10754	873-10142 04	NPO-11726	873-10218 09	JSC-12531
873-10068 04	LEWIS-11790	873-10143 03	NPO-11893	873-10219 09	JSC-14378
873-10069 04	M-FS-22125	873-10144 02	NPO-11921	873-10220 05	JSC-14339
873-10070 07	JSC-19200	873-10145 02	KSC-10242	873-10221 03	GSFC-11434
873-10071 04	M-FS-21328	873-10146 02	JSC-14321	873-10222 05	GSFC-10879
873-10072 08	LEWIS-11807	873-10147 04	M-FS-22353	873-10223 02	GSFC-11455
873-10073 09	GSFC-11540	873-10148 04	M-FS-24307	873-10224 04	JSC-14225
873-10074 02	KSC-10731	873-10149 04	KSC-10766	873-10225 02	GSFC-11794
873-10075 03	LANGLEY-11092	873-10150 06	JSC-17166	873-10226 02	JSC-13912
873-10076 06	LANGLEY-11309	873-10151 04	M-FS-21399	873-10227 09	JSC-14310
873-10077 04	LEWIS-11541	873-10152 01	M-FS-21133	873-10228 04	LANGLEY-11352
873-10078 05	M-FS-16570	873-10153 04	M-FS-21384	873-10229 05	LANGLEY-11354
873-10079 04	M-FS-22325	873-10154 02	M-FS-24242	873-10230 06	LEWIS-11995
873-10080 04	M-FS-22355	873-10155 03	M-FS-22565	873-10231 09	LEWIS-11997
873-10081 04	M-FS-22438	873-10156 05	M-FS-22563	873-10232 09	LEWIS-12010
873-10082 08	M-FS-22470	873-10157 02	M-FS-22601	873-10233 09	LEWIS-12019
873-10083 09	JSC-14082	873-10158 03	M-FS-19196	873-10234 06	JSC-19260
873-10084 04	JSC-14313	873-10159 02	M-FS-22342	873-10235 02	M-FS-21584

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B73-10236 02	JSC-14180	B73-10311 08	LEWIS-12042	B73-10387 01	NPO-11820
B73-10237 01	LANGLEY-10963	B73-10312 03	LEWIS-12054	B73-10388 04	NPO-11839
B73-10238 04	LANGLEY-10151	B73-10313 02	LEWIS-12064	B73-10389 02	NPO-11865
B73-10239 06	LANGLEY-10674	B73-10314 04	LEWIS-12072	B73-10390 01	NPO-11886
B73-10240 06	LANGLEY-11399	B73-10315 04	LEWIS-12075	B73-10391 08	NPO-11966
B73-10241 05	LANGLEY-11326	B73-10316 04	LEWIS-11844	B73-10392 02	GSFC-11513
B73-10242 03	LANGLEY-11221	B73-10317 02	JSC-14129	B73-10393 01	GSFC-11773
B73-10243 02	LEWIS-11870	B73-10318 02	JSC-12593	B73-10394 04	JSC-14465
B73-10244 09	LEWIS-11809	B73-10319 04	LANGLEY-11372	B73-10395 06	M-FS-22686
B73-10245 09	LEWIS-12011	B73-10320 05	JSC-14452	B73-10396 04	M-FS-22793
B73-10246 09	LEWIS-11859	B73-10321 02	LANGLEY-11358	B73-10397 04	M-FS-22797
B73-10247 09	LEWIS-11961	B73-10322 09	LANGLEY-11177	B73-10398 06	M-FS-24445
B73-10248 09	LEWIS-11996	B73-10323 02	M-FS-22546	B73-10399 03	M-FS-22434
B73-10249 01	LEWIS-12020	B73-10324 07	M-FS-24464	B73-10400 04	LANGLEY-10928
B73-10250 07	LEWIS-12034	B73-10325 06	M-FS-24424	B73-10401 02	JSC-14427
B73-10251 03	LEWIS-12065	B73-10326 06	M-FS-22691	B73-10402 04	JSC-14224
B73-10252 03	LEWIS-12077	B73-10327 02	M-FS-22693	B73-10403 04	GSFC-11214
B73-10253 04	GSFC-11737	B73-10328 04	M-FS-21396	B73-10404 05	JSC-14226
B73-10254 04	JSC-17662	B73-10329 07	M-FS-22638	B73-10405 06	JSC-14273
	JSC-17928	B73-10330 03	M-FS-22590	B73-10406 04	JSC-14428
B73-10255 02	GSFC-11602	B73-10331 02	M-FS-22591	B73-10407 04	LEWIS-11860
B73-10256 09	M-FS-22295	B73-10332 06	M-FS-21616	B73-10408 02	LEWIS-12044
B73-10257 02	GSFC-11510	B73-10333 01	GSFC-11302	B73-10409 03	LEWIS-12056
B73-10258 08	LEWIS-11661	B73-10334 02	GSFC-10949	B73-10410 02	LEWIS-12059
B73-10259 01	HQ-10812	B73-10335 07	GSFC-11340	B73-10411 02	LEWIS-12128
B73-10260 04	M-FS-22333	B73-10336 03	M-FS-21728	B73-10412 07	LEWIS-12154
B73-10261 02	JSC-14222	B73-10337 02	LANGLEY-11341	B73-10413 07	JSC-13789
B73-10262 03	ARC-10642	B73-10338 04	KSC-10769	B73-10414 06	LANGLEY-11433
B73-10263 09	ARC-10730	B73-10339 04	JSC-19300	B73-10415 07	LEWIS-11655
B73-10264 01	ARC-10734	B73-10340 08	JSC-14083	B73-10416 07	LANGLEY-10962
B73-10265 08	ARC-10737	B73-10341 04	ARC-10727	B73-10417 03	M-FS-22741
B73-10266 09	ARC-10096	B73-10342 02	ARC-10783	B73-10418 09	KSC-10819
B73-10267 02	ARC-10637	B73-10343 02	NPO-11302	B73-10419 06	LANGLEY-11383
B73-10268 03	ARC-10649	B73-10344 09	NPO-11628	B73-10420 03	LANGLEY-11435
B73-10269 04	ARC-10724	B73-10345 02	NPO-11701	B73-10421 03	M-FS-21087
B73-10270 05	ARC-10742	B73-10346 01	NPO-11706	B73-10422 03	M-FS-22724
B73-10271 04	ARC-10780	B73-10347 06	NPO-11773	B73-10423 03	M-FS-22768
B73-10272 05	ARC-10745	B73-10348 06	NPO-11846	B73-10424 04	LANGLEY-11056
B73-10273 02	NPO-11548	B73-10349 04	NPO-11870	B73-10425 02	LANGLEY-10970
B73-10274 09	NPO-11590	B73-10350 01	NPO-11881	B73-10426 02	KSC-10821
B73-10275 02	NPO-11600	B73-10351 01	NPO-11914	B73-10427 01	GSFC-10791
B73-10276 06	NPO-11645	B73-10352 02	NPO-11936	B73-10428 05	JSC-14486
B73-10277 02	NPO-11659	B73-10353 02	NPO-13285	B73-10429 06	JSC-14143
B73-10278 01	NPO-11703	B73-10354 02	NPO-13308	B73-10430 06	JSC-14592
B73-10279 03	JSC-14096	B73-10355 02	NPO-11399	B73-10431 02	JSC-12607
B73-10280 02	KSC-10644	B73-10356 01	NPO-11630	B73-10432 09	M-FS-22672
B73-10281 02	KSC-10326	B73-10357 04	NPO-11282	B73-10433 07	LANGLEY-11543
B73-10282 02	GSFC-11291	B73-10358 08	LANGLEY-11434	B73-10434 03	M-FS-22517
B73-10283 03	GSFC-11590	B73-10359 05	LANGLEY-10957	B73-10435 03	M-FS-22537
B73-10284 08	GSFC-11577	B73-10360 09	LANGLEY-11382	B73-10436 05	LANGLEY-11353
B73-10285 02	GSFC-11256	B73-10361 02	XLA-05099	B73-10437 04	LANGLEY-11503
B73-10286 01	HQ-10673	B73-10362 09	LANGLEY-11213	B73-10438 08	LANGLEY-11224
B73-10287 08	JSC-14448	B73-10363 09	LANGLEY-11197	B73-10439 08	LANGLEY-11134
B73-10288 02	NPO-11264	B73-10364 06	LANGLEY-11369	B73-10440 03	M-FS-19218
B73-10289 02	NPO-11333	B73-10365 02	GSFC-11619	B73-10441 03	JSC-12588
B73-10290 02	NPO-11358	B73-10366 01	JSC-14130	B73-10442 01	LANGLEY-11204
B73-10291 02	NPO-11361	B73-10367 02	KSC-10817	B73-10443 09	JSC-14496
B73-10292 01	NPO-11406	B73-10368 01	JSC-14131	B73-10444 09	JSC-14497
B73-10293 02	NPO-11437	B73-10369 07	HQ-10635	B73-10445 09	JSC-14495
B73-10294 02	NPO-11497	B73-10370 02	M-FS-22720	B73-10446 09	JSC-14494
B73-10295 01	NPO-11565	B73-10371 04	GSFC-11582	B73-10447 04	LANGLEY-11053
B73-10296 09	NPO-11620	B73-10372 04	M-FS-22713	B73-10448 05	JSC-19187
B73-10297 02	NPO-11623	B73-10373 04	M-FS-22796	B73-10449 02	JSC-14264
B73-10298 08	NPO-11635	B73-10374 01	M-FS-22798	B73-10450 07	NPO-11958
B73-10299 02	NPO-11661	B73-10375 08	M-FS-22458	B73-10451 02	NPO-11965
B73-10300 09	NPO-11714	B73-10376 04	ARC-10741	B73-10452 02	NPO-13053
B73-10301 09	NPO-11727	B73-10377 05	ARC-10747	B73-10453 04	NPO-13113
B73-10302 09	NPO-11736	B73-10378 03	ARC-10769	B73-10454 02	NPO-13123
B73-10303 09	NPO-11750	B73-10379 03	ARC-10773	B73-10455 06	NPO-13149
B73-10304 01	XGS-07805	B73-10380 06	ARC-10774	B73-10456 06	NPO-13151
B73-10305 02	JSC-14285	B73-10381 03	ARC-10775	B73-10457 04	NPO-13168
	JSC-14286	B73-10382 02	ARC-10785	B73-10458 03	NPO-13202
B73-10306 02	JSC-14419	B73-10383 03	NPO-10769	B73-10459 01	NPO-13441
B73-10307 09	LEWIS-11816	B73-10384 09	NPO-11556	B73-10460 02	NPO-13051
B73-10308 02	LEWIS-11797	B73-10385 04	NPO-11619	B73-10461 07	NPO-13208
B73-10309 09	LEWIS-12008	B73-10386 01	NPO-11776	B73-10462 03	GSFC-11593
B73-10310 04	LEWIS-12041		NPO-11819	B73-10463 07	LANGLEY-11523

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B73-10464 06	.....	LANGLEY-11561	B74-10012 03	.....	LEWIS-12221	B74-10089 01	.....	GSFC-11627
B73-10465 06	.....	JSC-14182	B74-10013 06	.....	LEWIS-11087	B74-10090 01	.....	LANGLEY-11174
B73-10466 06	.....	JSC-12394	B74-10014 07	.....	LEWIS-12204	B74-10091 06	.....	LANGLEY-11175
B73-10467 02	.....	NPO-13178	B74-10015 01	.....	LEWIS-12222	B74-10092 06	.....	LANGLEY-11232
B73-10468 03	.....	GSFC-11487	B74-10016 04	.....	LEWIS-11930	B74-10093 02	.....	LANGLEY-11565
B73-10469 04	.....	GSFC-11786	B74-10017 04	.....	LEWIS-12094	B74-10094 03	.....	LANGLEY-11612
B73-10470 06	.....	LANGLEY-11305	B74-10018 08	.....	LEWIS-12087	B74-10095 04	.....	MSC-14187
B73-10471 03	.....	LANGLEY-11548	B74-10019 03	.....	LEWIS-12223	B74-10096 04	.....	MSC-14435
B73-10472 07	.....	M-FS-22541	B74-10020 07	.....	LEWIS-12085	B74-10097 02	.....	NPO-11461
B73-10473 07	.....	M-FS-22542	B74-10021 02	.....	GSFC-10975	B74-10098 02	.....	NPO-11515
B73-10474 05	.....	M-FS-22833	B74-10022 03	.....	LANGLEY-11313	B74-10099 02	.....	NPO-11761
B73-10475 04	.....	M-FS-21317	B74-10023 07	.....	MSC-19335	B74-10100 01	.....	NPO-11775
B73-10476 01	.....	M-FS-24470	B74-10024 02	.....	GSFC-10087	B74-10101 03	.....	NPO-11856
B73-10477 05	.....	M-FS-20284	B74-10025 02	.....	MSC-14557	B74-10102 03	.....	NPO-11861
B73-10478 06	.....	GSFC-11205	B74-10026 01	.....	GSFC-11425	B74-10103 05	.....	NPO-11887
B73-10479 02	.....	HQ-10728	B74-10027 04	.....	LANGLEY-11288	B74-10104 02	.....	NPO-11941
B73-10480 02	.....	M-FS-22909	B74-10028 06	.....	KSC-10855	B74-10105 07	.....	NPO-11951
B73-10481 04	.....	M-FS-22918	B74-10029 05	.....	LANGLEY-11203	B74-10106 02	.....	NPO-13044
B73-10482 03	.....	M-FS-24475	B74-10030 06	.....	LANGLEY-11443	B74-10107 01	.....	NPO-13064
B73-10483 04	.....	KSC-10721	B74-10031 07	.....	LANGLEY-11604	B74-10108 03	.....	NPO-13112
B73-10484 06	.....	M-FS-22743	B74-10032 04	.....	M-FS-22223	B74-10109 02	.....	ARC-10090
B73-10485 06	.....	M-FS-22744	B74-10033 09	.....	M-FS-22708	B74-10110 01	.....	ARC-10445
B73-10486 02	.....	M-FS-22835	B74-10034 09	.....	M-FS-22935	B74-10111 04	.....	ARC-10551
B73-10487 02	.....	M-FS-22898	B74-10035 02	.....	GSFC-10990	B74-10112 01	.....	ARC-10596
B73-10488 03	.....	GSFC-11188	B74-10036 04	.....	GSFC-11095	B74-10113 09	.....	ARC-10833
B73-10489 07	.....	M-FS-21318	B74-10037 09	.....	GSFC-11616	B74-10114 08	.....	ARC-10838
		M-FS-21319	B74-10038 03	.....	GSFC-11746	B74-10115 02	.....	ARC-10842
B73-10490 03	.....	ARC-10776	B74-10039 07	.....	KSC-10850	B74-10116 03	.....	ARC-10844
B73-10491 02	.....	ARC-10746	B74-10040 09	.....	M-FS-21406	B74-10117 03	.....	ARC-10850
B73-10492 05	.....	ARC-10759	B74-10041 02	.....	GSFC-11760	B74-10118 03	.....	ARC-10853
B73-10493 03	.....	ARC-10461	B74-10042 03	.....	GSFC-11553	B74-10119 05	.....	ARC-10855
B73-10494 05	.....	ARC-10784	B74-10043 09	.....	M-FS-22536	B74-10120 01	.....	ARC-10856
B73-10495 05	.....	ARC-10799	B74-10044 09	.....	M-FS-22728	B74-10121 04	.....	LEWIS-12159
B73-10496 06	.....	ARC-10756	B74-10045 06	.....	ARC-10512	B74-10122 04	.....	LEWIS-12272
B73-10497 06	.....	ARC-10462	B74-10046 06	.....	ARC-10754	B74-10123 09	.....	LEWIS-12206
B73-10498 05	.....	ARC-10796	B74-10047 01	.....	ARC-10762	B74-10124 04	.....	LEWIS-11490
B73-10499 02	.....	ARC-10160	B74-10048 06	.....	ARC-10787	B74-10125 08	.....	LEWIS-12184
B73-10500 02	.....	ARC-10743	B74-10049 06	.....	ARC-10788	B74-10126 08	.....	LEWIS-12331
B73-10501 03	.....	ARC-10772	B74-10050 02	.....	ARC-10789	B74-10127 09	.....	LEWIS-11920
B73-10502 06	.....	ARC-10771	B74-10051 03	.....	ARC-10791	B74-10128 09	.....	LEWIS-11910
B73-10503 04	.....	ARC-10748	B74-10052 04	.....	ARC-10792	B74-10129 09	.....	LEWIS-12178
B73-10504 04	.....	ARC-10721	B74-10053 04	.....	ARC-10797	B74-10130 09	.....	LEWIS-12129
B73-10505 04	.....	ARC-10782	B74-10054 03	.....	ARC-10829	B74-10131 06	.....	GSFC-11551
B73-10506 02	.....	ARC-10763	B74-10055 03	.....	ARC-10828	B74-10132 04	.....	LANGLEY-10850
B73-10507 04	.....	ARC-10749	B74-10056 03	.....	ARC-10832	B74-10133 04	.....	LANGLEY-10976
B73-10508 08	.....	JSC-19095	B74-10057 04	.....	ARC-10837	B74-10134 03	.....	LANGLEY-11045
B73-10509 01	.....	GSFC-11215	B74-10058 06	.....	ARC-10839	B74-10135 06	.....	LANGLEY-11325
B73-10510 02	.....	KSC-10812	B74-10059 06	.....	ARC-10840	B74-10136 03	.....	LANGLEY-11338
B73-10511 02	.....	JSC-14558	B74-10060 03	.....	LEWIS-12055	B74-10137 02	.....	LANGLEY-11379
B73-10512 01	.....	LANGLEY-11176	B74-10061 06	.....	LEWIS-12264	B74-10138 06	.....	LANGLEY-11570
B73-10513 02	.....	LANGLEY-11312	B74-10062 07	.....	LEWIS-11873	B74-10139 03	.....	LANGLEY-11580
B73-10514 02	.....	LANGLEY-11564	B74-10063 03	.....	LEWIS-11866	B74-10140 05	.....	LANGLEY-11579
B73-10515 01	.....	GSFC-11368	B74-10064 01	.....	LEWIS-12267			LANGLEY-11595
B73-10516 03	.....	GSFC-11860	B74-10065 03	.....	LEWIS-11971	B74-10141 08	.....	LANGLEY-11601
B73-10517 03	.....	XGS-03644	B74-10066 03	.....	LEWIS-12058	B74-10142 02	.....	LANGLEY-11617
B73-10518 06	.....	M-FS-22678	B74-10067 09	.....	LEWIS-12186	B74-10143 03	.....	LANGLEY-11641
B73-10519 01	.....	GSFC-11367	B74-10068 01	.....	LEWIS-12218	B74-10144 06	.....	M-FS-22039
B73-10520 01	.....	NPO-13408	B74-10069 01	.....	LEWIS-12268	B74-10145 09	.....	M-FS-22697
B73-10521 07	.....	NPO-13146	B74-10070 06	.....	XAC-05632	B74-10146 06	.....	M-FS-22807
B73-10522 04	.....	LANGLEY-11415	B74-10071 03	.....	ARC-10322	B74-10147 02	.....	M-FS-22887
B73-10523 05	.....	LANGLEY-11525	B74-10072 03	.....	ARC-10755	B74-10148 07	.....	M-FS-22899
B73-10524 06	.....	M-FS-21628	B74-10073 04	.....	ARC-10779	B74-10149 03	.....	M-FS-22943
B73-10525 02	.....	M-FS-22088	B74-10074 04	.....	ARC-10803	B74-10150 02	.....	M-FS-23026
B73-10526 09	.....	M-FS-22322	B74-10075 05	.....	ARC-10845	B74-10151 06	.....	M-FS-24325
B73-10527 04	.....	M-FS-22562	B74-10076 06	.....	M-FS-22848	B74-10152 03	.....	MSC-14705
B73-10528 08	.....	M-FS-22896	B74-10077 04	.....	NPO-13046	B74-10153 05	.....	MSC-14632
B74-10001 06	.....	LEWIS-11690	B74-10078 02	.....	LEWIS-12238	B74-10154 04	.....	MSC-14618
B74-10002 04	.....	LEWIS-11827	B74-10079 01	.....	LEWIS-12265	B74-10155 05	.....	MSC-14615
B74-10003 04	.....	LEWIS-11828	B74-10080 05	.....	LEWIS-11644	B74-10156 06	.....	MSC-14555
B74-10004 02	.....	LEWIS-11964	B74-10081 03	.....	LEWIS-12089	B74-10157 04	.....	MSC-14331
B74-10005 04	.....	LEWIS-12057	B74-10082 04	.....	LEWIS-12270	B74-10158 02	.....	NPO-11875
B74-10006 01	.....	LEWIS-12096	B74-10083 02	.....	LEWIS-11600	B74-10159 04	.....	NPO-11918
B74-10007 04	.....	LEWIS-12138	B74-10084 09	.....	LEWIS-12153	B74-10160 01	.....	NPO-11924
B74-10008 07	.....	LEWIS-12139	B74-10085 04	.....	LEWIS-12237	B74-10161 03	.....	NPO-11942
B74-10009 07	.....	LEWIS-12140	B74-10086 02	.....	LEWIS-12266	B74-10162 02	.....	NPO-11948
B74-10010 07	.....	LEWIS-12168	B74-10087 06	.....	LEWIS-12327	B74-10163 02	.....	NPO-11962
B74-10011 04	.....	LEWIS-12169	B74-10088 02	.....	GSFC-11182	B74-10164 07	.....	NPO-13059

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B74-10165 02	NPO-13067	B74-10241 06	GSFC-11752	B75-10017 03	LEWIS-12433
B74-10166 03	NPO-13105	B74-10242 01	GSFC-11849	B75-10018 09	LEWIS-12152
B74-10167 03	NPO-13114	B74-10243 03	ARC-10802	B75-10019 09	LEWIS-12285
B74-10168 03	NPO-13154	B74-10244 04	ARC-10822	B75-10020 09	LEWIS-12286
B74-10169 09	NPO-13480	B74-10245 05	ARC-10857	B75-10021 09	LEWIS-12325
B74-10170 02	ARC-10466	B74-10246 03	ARC-10889	B75-10022 06	LEWIS-12269
B74-10171 02	ARC-10806	B74-10247 04	LEWIS-12118	B75-10023 04	LEWIS-11386
B74-10172 05	ARC-10816	B74-10248 04	LEWIS-12394	B75-10024 03	LEWIS-12361
B74-10173 03	ARC-10848	B74-10249 05	ARC-10534	B75-10025 01	ARC-10711
B74-10174 06	ARC-10854	B74-10250 02	ERC-10214	B75-10026 03	ARC-10867
B74-10175 04	ARC-10881	B74-10251 01	ERC-10285	B75-10027 04	ARC-10869
B74-10176 02	LANGLEY-11387	B74-10252 06	ERC-10365	B75-10028 03	ARC-10925
B74-10177 04	LANGLEY-11606	B74-10253 01	ERC-10015	B75-10029 09	ARC-10927
B74-10178 02	LANGLEY-11607	B74-10254 03	GSFC-11079	B75-10030 05	ARC-10928
B74-10179 06	LANGLEY-11643	B74-10255 01	GSFC-11446	B75-10031 01	GSFC-11617
B74-10180 01	LANGLEY-11648	B74-10256 01	GSFC-11763	B75-10032 09	GSFC-11910
B74-10181 03	GSFC-11694	B74-10257 01	GSFC-11862	B75-10033 09	GSFC-11938
B74-10182 03	GSFC-11782	B74-10258 01	GSFC-11877	B75-10034 03	LANGLEY-11711
B74-10183 05	KSC-10833	B74-10259 01	LANGLEY-10320	B75-10035 03	LANGLEY-11735
B74-10184 03	LANGLEY-11505	B74-10260 01	LANGLEY-11112	B75-10036 01	M-FS-23083
B74-10185 08	LANGLEY-11526	B74-10261 03	LANGLEY-11141	B75-10037 02	M-FS-23100
B74-10186 09	LANGLEY-11569	B74-10262 01	LANGLEY-11528	B75-10038 04	M-FS-23134
B74-10187 03	LANGLEY-11645	B74-10263 08	LANGLEY-11589	B75-10039 01	M-FS-23147
B74-10188 05	LANGLEY-11649	B74-10264 04	LANGLEY-11628	B75-10040 03	MSC-14407
B74-10189 09	M-FS-22873	B74-10265 04	M-FS-19234	B75-10041 05	MSC-14627
B74-10190 09	M-FS-22910	B74-10266 07	M-FS-23057	B75-10042 04	MSC-14688
B74-10191 02	MSC-14649	B74-10267 06	M-FS-23059	B75-10043 03	MSC-14724
B74-10192 01	MSC-19399	B74-10268 04	M-FS-23090	B75-10044 06	MSC-19301
B74-10193 06	MSC-19401	B74-10269 07	MSC-12615	B75-10045 05	NPO-13084
B74-10194 03	NPO-11743	B74-10270 08	MSC-12631	B75-10046 02	NPO-13140
B74-10195 03	NPO-13128	B74-10271 03	MSC-13972	B75-10047 03	NPO-13175
B74-10196 01	ARC-10729	B74-10272 08	MSC-14721	B75-10048 03	NPO-13215
B74-10197 01	ARC-10753	B74-10273 06	MSC-19372	B75-10049 01	NPO-13253
B74-10198 02	ARC-10827	B74-10274 01	NPO-11905	B75-10050 03	NPO-13263
B74-10199 05	ERC-10338	B74-10275 03	NPO-12128	B75-10051 05	NPO-13423
B74-10200 03	HQ-10791	B74-10276 02	NPO-13082		NPO-13519
B74-10201 04	LANGLEY-10800	B74-10277 02	NPO-13118	B75-10052 06	NPO-13425
B74-10202 03	LANGLEY-11152	B74-10278 05	NPO-13136	B75-10053 09	NPO-13470
B74-10203 09	LANGLEY-11199	B74-10279 09	NPO-13143	B75-10054 07	NPO-13495
B74-10204 09	LANGLEY-11533	B74-10280 01	NPO-13153	B75-10055 06	ARC-10786
B74-10205 09	LANGLEY-11209	B74-10281 01	NPO-13157	B75-10056 04	ARC-10823
B74-10206 09	LANGLEY-11535	B74-10282 01	NPO-13160	B75-10057 05	ARC-10849
B74-10207 09	LANGLEY-11581	B74-10283 01	NPO-13171	B75-10058 06	ARC-10864
B74-10208 04	LANGLEY-11675	B74-10284 02	NPO-13245	B75-10059 02	ARC-10870
B74-10209 01	NPO-11572	B74-10285 02	ERC-10267	B75-10060 09	ARC-10880
B74-10210 05	NPO-11609	B74-10286 01	GSFC-11889	B75-10061 05	ARC-10929
B74-10211 03	NPO-11895	B74-10287 01	GSFC-11892	B75-10062 04	ARC-10714
B74-10212 03	NPO-13055	B74-10288 02	GSFC-11909	B75-10063 06	LEWIS-12442
B74-10213 05	NPO-13063	B74-10289 05	LANGLEY-10789	B75-10064 06	LEWIS-12448
B74-10214 08	NPO-13148	B74-10290 01	LANGLEY-11658	B75-10065 06	LEWIS-12323
B74-10215 09	NPO-13368	B74-10291 03	LANGLEY-11699	B75-10066 04	LEWIS-12366
B74-10216 03	ARC-10847	B74-10292 07	M-FS-23062	B75-10067 04	LEWIS-12510
B74-10217 03	ARC-10852	B74-10293 03	M-FS-23107	B75-10068 02	LEWIS-12109
B74-10218 04	ARC-10860	B74-10294 01	M-FS-23133	B75-10069 01	FRC-10053
B74-10219 04	ARC-10861	B74-10295 01	NPO-13138	B75-10070 01	GSFC-11747
B74-10220 05	ARC-10868	B74-10296 02	NPO-13139	B75-10071 01	GSFC-11913
B74-10221 09	ARC-10882	B74-10297 07	NPO-13170	B75-10072 04	LANGLEY-11330
B74-10222 04	ARC-10919	B74-10298 07	NPO-13201	B75-10073 02	LANGLEY-11578
B74-10223 03	MSC-12616	B74-10299 02	NPO-13205	B75-10074 06	LANGLEY-11669
B74-10224 03	MSC-19442	B74-10300 02	NPO-13217	B75-10075 03	LANGLEY-11799
B74-10225 09	M-FS-22401	B74-10301 03	NPO-13458	B75-10076 04	M-FS-23101
B74-10226 05	M-FS-23074	B75-10001 03	LEWIS-12083	B75-10077 05	M-FS-23143
B74-10227 06	LEWIS-12332	B75-10002 09	LEWIS-12324	B75-10078 07	M-FS-23151
B74-10228 06	LEWIS-12346	B75-10003 06	LEWIS-12365	B75-10079 05	MSC-12663
B74-10229 03	GSFC-11492	B75-10004 03	LEWIS-12402	B75-10080 03	MSC-14472
B74-10230 03	GSFC-11829	B75-10005 09	LEWIS-12247	B75-10081 03	ARC-10463
B74-10231 05	GSFC-11917	B75-10006 08	LEWIS-11573	B75-10082 03	ARC-10631
B74-10232 03	HQ-10732	B75-10007 04	LEWIS-12073	B75-10083 05	ARC-10758
B74-10233 06	XLA-11028	B75-10008 03	LEWIS-12360	B75-10084 04	ARC-10892
B74-10234 01	LANGLEY-11536	B75-10009 06	LEWIS-12376	B75-10085 06	GSFC-11077
	LANGLEY-11598	B75-10010 06	LEWIS-12377	B75-10086 02	GSFC-11898
B74-10235 06	LANGLEY-11588	B75-10011 07	LEWIS-12403	B75-10087 03	HQ-10844
B74-10236 09	LANGLEY-11596	B75-10012 02	LEWIS-12422	B75-10088 01	HQ-10851
B74-10237 07	M-FS-23047	B75-10013 06	LEWIS-12434	B75-10089 08	LANGLEY-11661
B74-10238 06	M-FS-23086	B75-10014 01	LEWIS-12437	B75-10090 03	LANGLEY-11750
B74-10239 01	MSC-12661	B75-10015 09	LEWIS-12110	B75-10091 01	LANGLEY-11781
B74-10240 07	MSC-14736	B75-10016 04	LEWIS-12412	B75-10092 02	LANGLEY-11814

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

875-10093 09	M-FS-22838	875-10168 05	MSC-14276	875-10242 09	LEWIS-12179
875-10094 09	M-FS-23027	875-10169 02	MSC-14330	875-10243 09	LEWIS-12387
875-10095 06	M-FS-23140	875-10170 05	MSC-10170	875-10244 03	LEWIS-12558
875-10096 01	M-FS-23157	875-10171 01	MSC-14810	875-10245 03	LEWIS-12545
875-10097 03	M-FS-23163	875-10172 09	MSC-15829	875-10246 04	LEWIS-12562
875-10098 03	M-FS-23167		MSC-19391	875-10247 02	GSFC-11824
875-10099 03	M-FS-23170	875-10173 06	MSC-19482	875-10248 03	GSFC-11895
875-10100 09	M-FS-23172	875-10174 04	NPO-11853	875-10249 07	GSFC-11902
875-10101 01	M-FS-23184	875-10175 02	NPO-13110	875-10250 03	GSFC-11951
875-10102 01	M-FS-23193	875-10176 03	NPO-13147	875-10251 06	GSFC-11978
875-10103 02	M-FS-23216	875-10177 05	NPO-13626	875-10252 09	GSFC-12009
875-10104 04	MSC-12619	875-10178 04	NPO-13345	875-10253 05	GSFC-12039
875-10105 03	MSC-12677	875-10179 08	NPO-13394	875-10254 02	KSC-10699
875-10106 09	MSC-14386	875-10180 02	NPO-13410	875-10255 01	KSC-10793
875-10107 02	MSC-14717	875-10181 03	NPO-13459	875-10256 03	LANGLEY-11351
875-10108 02	MSC-14788	875-10182 03	NPO-13497	875-10257 08	LANGLEY-11397
875-10109 01	MSC-19504	875-10183 03	NPO-13623	875-10258 06	LANGLEY-11540
875-10110 06	MSC-19523	875-10184 02	GSFC-11778	875-10259 06	LANGLEY-11815
875-10111 06	MSC-19528	875-10185 03	LEWIS-12393	875-10260 01	LANGLEY-11818
875-10112 03	NPO-13131	875-10186 09	LEWIS-12388	875-10261 08	LANGLEY-11829
875-10113 04	NPO-13224	875-10187 09	LEWIS-12519	875-10262 03	LANGLEY-11830
875-10114 02	NPO-13276	875-10188 09	LEWIS-12520	875-10263 09	LANGLEY-11834
875-10115 03	NPO-13289	875-10189 03	LEWIS-12511	875-10264 06	LANGLEY-11897
875-10116 03	NPO-13303	875-10190 06	LEWIS-12417	875-10265 02	M-FS-23200
875-10117 04	NPO-13309	875-10191 02	GSFC-11844	875-10266 03	M-FS-23234
875-10118 03	NPO-13346	875-10192 02	KSC-10782	875-10267 08	M-FS-23237
875-10119 03	NPO-13390	875-10193 04	KSC-11005	875-10268 03	M-FS-23268
875-10120 01	NPO-13419	875-10194 09	LANGLEY-11324	875-10269 05	MSC-12710
875-10121 04	NPO-13421	875-10195 01	LANGLEY-11705	875-10270 06	MSC-14080
875-10122 02	NPO-13439	875-10196 01	LANGLEY-11707	875-10271 04	MSC-14792
875-10123 03	NPO-13348	875-10197 01	LANGLEY-11728	875-10272 03	MSC-14793
875-10124 03	NPO-13462	875-10198 04	M-FS-21114	875-10273 09	MSC-14802
875-10125 03	NPO-13482	875-10199 06	M-FS-21701	875-10274 01	MSC-14822
875-10126 03	NPO-13504	875-10200 04	M-FS-23239	875-10275 02	NPO-13231
875-10127 03	NPO-13531	875-10201 06	MSC-19499	875-10276 07	NPO-13304
875-10128 03	NPO-13615	875-10202 03	NPO-13327	875-10277 01	NPO-13385
875-10129 02	ARC-10899	875-10203 06	NPO-13342	875-10278 09	NPO-13451
875-10130 09	ARC-10955		NPO-13464	875-10279 03	NPO-13490
875-10131 06	ARC-10712	875-10204 02	NPO-13443	875-10280 04	NPO-13530
875-10132 06	ARC-10807	875-10205 02	NPO-13465	875-10281 02	NPO-13645
875-10133 09	ARC-10879	875-10206 03	NPO-13544	875-10282 06	NPO-13658
875-10134 06	LEWIS-12447	875-10207 04	NPO-13555	875-10283 01	LEWIS-12598
875-10135 06	LEWIS-12499	875-10208 06	NPO-13560	875-10284 06	ARC-10906
875-10136 02	LEWIS-12518		NPO-13561	875-10285 03	ARC-10958
875-10137 04	LEWIS-12416	875-10209 06	NPO-13579	875-10286 03	LEWIS-12507
875-10138 03	LEWIS-12502	875-10210 03	NPO-13580	875-10287 06	LEWIS-12560
875-10139 03	LEWIS-12503	875-10211 05	NPO-13643	875-10288 03	LEWIS-12595
875-10140 09	ARC-10744	875-10212 08	NPO-13650	875-10289 01	LEWIS-12587
875-10141 03	ARC-10781	875-10213 01	GSFC-11668	875-10290 04	LEWIS-12554
875-10142 03	ARC-10952	875-10214 06	GSFC-11893	875-10291 02	GSFC-11868
875-10143 09	ARC-10960	875-10215 02	GSFC-11924	875-10292 09	GSFC-11952
875-10144 04	ARC-10949	875-10216 08	GSFC-12004	875-10293 04	GSFC-12023
875-10145 08	ARC-10933	875-10217 02	LANGLEY-11125	875-10294 09	GSFC-12038
875-10146 09	ARC-10940	875-10218 02	LANGLEY-11638	875-10295 09	GSFC-12079
875-10147 03	LEWIS-12509	875-10219 01	LANGLEY-11704	875-10296 02	KSC-10851
875-10148 05	LEWIS-12515	875-10220 01	LANGLEY-11761	875-10297 02	KSC-11006
875-10149 03	LEWIS-12102	875-10221 01	LANGLEY-11765	875-10298 06	LANGLEY-11602
875-10150 02	LEWIS-12523	875-10222 01	LANGLEY-11766	875-10299 08	LANGLEY-11770
875-10151 06	LEWIS-12514	875-10223 03	LANGLEY-11768	875-10300 06	LANGLEY-11825
875-10152 02	LEWIS-12445	875-10224 03	LANGLEY-11771	875-10301 08	M-FS-23272
875-10153 02	GSFC-11925	875-10225 04	LANGLEY-11801	875-10302 09	LANGLEY-11887
875-10154 02	KSC-10736	875-10226 03	LANGLEY-11809	875-10303 05	LANGLEY-11894
875-10155 09	KSC-10837	875-10227 03	LANGLEY-11833	875-10304 01	M-FS-23159
875-10156 02	LANGLEY-11647	875-10228 03	LANGLEY-11842	875-10305 03	M-FS-23169
875-10157 04	LANGLEY-11774	875-10229 03	M-FS-23188	875-10306 01	M-FS-23242
875-10158 03	LANGLEY-11796	875-10230 01	M-FS-23238	875-10307 03	M-FS-23251
875-10159 04	LANGLEY-11800	875-10231 04	M-FS-23257	875-10308 04	M-FS-23275
875-10160 03	LANGLEY-11883	875-10232 03	M-FS-23261	875-10309 08	M-FS-23298
875-10161 02	M-FS-22589	875-10233 01	MSC-14774	875-10310 04	M-FS-23306
	M-FS-23173	875-10234 06	MSC-19428	875-10311 03	M-FS-23310
875-10162 02	M-FS-23195	875-10235 03	MSC-14823	875-10312 01	M-FS-23327
875-10163 04	M-FS-23218	875-10236 03	MSC-14866	875-10313 06	M-FS-23329
875-10164 08	M-FS-23228	875-10237 03	NPO-13630	875-10314 04	MSC-12600
	M-FS-23229	875-10238 08	NPO-13535	875-10315 03	MSC-12640
875-10165 06	M-FS-23260	875-10239 03	NPO-13532	875-10316 02	MSC-12721
875-10166 05	MSC-12564	875-10240 02	NPO-13525	875-10317 05	MSC-14835
875-10167 05	MSC-14062	875-10241 07	LEWIS-12559	875-10318 09	MSC-14865

TECH BRIEF/ORIGINATING CENTER NUMBER INDEX

B75-10319 08	MSC-14883
B75-10320 04	MSC-14903
B75-10321 04	MSC-19549
B75-10322 07	MSC-19554
B75-10323 02	NPO-13097
B75-10324 01	NPO-13237
B75-10325 02	NPO-13286
B75-10326 02	NPO-13428
B75-10327 04	NPO-13487
B75-10328 03	NPO-13524
B75-10329 03	NPO-13557
B75-10330 01	NPO-13568
B75-10331 05	NPO-13572
B75-10332 03	NPO-13604
B75-10333 03	NPO-13606
B75-10334 07	NPO-13613
B75-10335 03	NPO-13614
B75-10336 04	NPO-13620
B75-10337 01	NPO-13646
B75-10338 09	NPO-99999
B75-10339 04	MSC-12568

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